Air Quality Action Plan For Elmbridge Borough Council

June 2011

Executive Summary

Detailed assessments of air quality in the Borough, undertaken by the Council, have identified that the Government's air quality objective for annual mean nitrogen dioxide has not been met by the specified date. As a result this Action Plan has been developed in recognition of the legal requirement on the Council to work towards air quality objectives within the Borough; this is as required under Part IV of the Environment Act 1995 and the relevant air quality regulations. The Council has already designated seven Air Quality Management Areas across small parts of the Borough. This Air Quality Action Plan (AQAP) details the measures that Elmbridge Borough Council and its partners are taking, intending and considering that will help to improve air quality and fulfil its statutory duties.

Most of the air pollution in the Elmbridge AQMAs is caused by road traffic. The AQAP reflects this by including measures to reduce the pollution emitted from vehicles on the roads. Elmbridge Borough Council is also addressing emissions from non-road sources such as industrial, commercial and domestic activities for the areas declared for nitrogen dioxide.

The AQAP is a working document that should stimulate new ideas and transform existing policies to improve air quality across the Council and beyond.

Widespread and continuing consultation and participation are essential, both within the Council and externally with relevant stakeholders and the public. An effective Action Plan, that will achieve its targets, is one that has gained Member and Corporate commitment and support.

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1. Introduction to the Elmbridge B.C Air Quality Action Plan

1.1 Overview

This is the Air Quality Action Plan for the Elmbridge Borough Council (the "Council") that will help to improve air quality and work towards the achievement of the Government's air quality objectives in the designated Air Quality Management Areas within the Borough. The Action Plan includes details of existing initiatives as well as proposed measures and their implementation.

The Action Plan is a statutory requirement and part of the Council's continuing Local Air Quality Management responsibilities under Part IV of the Environment Act 1995. The Council is seeking to produce the Action Plan in partnership with other stakeholder organisations and for that purpose is working closely with Surrey County Council and other agencies. The purpose of the Action Plan as required by section 84 of the Environment Act is to outline measures "in pursuit of the achievement of air quality standards and objectives in the designated area, of any powers exercisable by the authority".

1.2 Background

1.2.1 Effects of air quality in the UK

Air pollution affects the quality of air that we breathe and although air quality has improved in the UK in recent decades, evidence shows that invisible pollutants in the air today can still significantly harm human health and the environment. Exposure to poor air quality can have a long-term effect on health; this is associated with premature mortality due to cardiopulmonary (heart and lung) effects. In the shorter-term, high pollution episodes can trigger increased admissions to hospital and contribute to the premature death of those people that are more vulnerable to daily changes in levels of air pollutants. Air pollution can also have negative impacts on our environment, both in terms of direct effects of pollutants on vegetation, and indirectly through effects on the acid and nutrient status of soils and waters.

Recent estimates indicate that poor air quality reduces the life expectancy of everyone in the UK by an average of seven to eight months and up to 50,000 people a year may die prematurely because of it (EAC, 2010). This impact of air quality on life expectancy is considered greater than that from both road traffic accidents and passive smoking.

1.2.2 U.K Government's Air Quality objectives

Part IV of the Environment Act 1995 introduced new responsibilities to both national and local government throughout the UK. These responsibilities include the requirement upon the national government and devolved administrations to develop an Air Quality Strategy (AQS) for England, Wales, Scotland and Northern Ireland. The overall purpose of the AQS is to seek improvements in air quality for the benefit of public health. The first AQS was produced in 1997; it was amended in 2000 and the most recent version produced in 2007(Defra, 2007).

Local air quality management (LAQM) was also introduced by the Environment Act 1995. It requires local authorities to periodically review and assess air quality across their areas. The AQS confirms that LAQM provides a major component of the government's plan for air quality improvement across the UK.

Air quality objectives have been set for those air pollutants deemed to be of most concern and seven of these are included under the LAQM regime. A summary of these pollutants and the air quality objectives are given in Appendix 1. The objectives are all based on health-based standards using scientific advice taking into account the likely cost and benefits, as well as feasibility and practicality in meeting the objectives. The objectives are mostly in line with limit values prescribed by EU Directives, although additional objectives (including bringing forward the date for compliance) have been included for some pollutants.

1.2.3 Elmbridge Borough Council position

The LAQM process requires a phased approach over the period from 1999 to 2017, by which a local authority is required to undertake separate rounds of the review and assessment of air quality in its area. All local authorities are required to undertake Updating and Screening Assessments (USA) (in 2003, 2006, 2009, 2012 and 2015). This is to ensure that each local authority undertakes a level of assessment that is commensurate with the risk of an air quality objective being exceeded. The process also requires a Detailed Assessment to determine whether an Air Quality Management Area (AQMA) is needed. If an AQMA is designated, the Council must undertake a Further Assessment of air quality and produce an Action Plan.

Previously the Council has assessed and screened (most recently in 2009): benzene, 1,3 butadiene, carbon monoxide, lead, particulate matter (PM_{10}) and sulphur dioxide and found that these pollutants were not likely to exceed the air quality objectives in the Borough (see Table 10).

However, for nitrogen dioxide (NO_2), the Council undertook two separate Detailed Assessments of air quality. These showed that the annual mean objective of 40 µg m^{-3} for NO_2 was exceeded in parts of the Borough. As a result the Council initially declared two AQMAs, then a further five, for those parts of the Borough affected by these high concentrations with public exposure (see section 1.5).

It should be further noted that following more recent monitoring and modelling in its 2010 Further Assessment, the Council is also considering extending the Walton on Thames AQMA (AQMA 3) slightly at its northern end and reducing the length of the AQMAs at Hampton Court Way, Molesey (AQMA 4) and Walton Road, Molesey (AQMA 2)). The other AQMAs will continue to be monitored.

1.3 Action Plan requirements

Policy guidance LAQM. PG09 (Defra, 2009) provides advice as to how the Council should develop its Air Quality Action Plan. The guidance indicates that a detailed description of actions, the dates by which these are to be achieved and information on how achievement is to be measured is an integral part of action planning. Where possible, Action Plans should include a quantified projected outcome with timescales for reporting against in subsequent progress reports. Furthermore the Environment Act also permits the Council from time to time revise an action plan.

Importantly however, the guidance notes that it will often be the case that most measures in an Action Plan cannot be quantified. In these cases, qualitative information, along with any quantifiable information as far as is possible, is expected.

The Action Plan must include the following:

• Quantification of the source contributions to the predicted exceedences of the relevant objectives; this will allow the Action Plan measures to be effectively targeted.
• Evidence that all available options have been considered.
• How the Council will use its powers and also work in conjunction with other organisations in pursuit of the air quality objectives.
• Clear timescales in which the authority and other organisations and agencies propose to implement the measures within its plan.
• Where possible, quantification of the expected impacts of the proposed measures and an indication as to whether the measures will be sufficient to meet the air quality objectives. Where feasible, data on emissions could be included as well as data on concentrations where possible.
• How the Council intends to monitor and evaluate the effectiveness of the plan.

The Council is also required to consider the wider economic, social and environmental impact, bearing in mind other legal requirements and policy drivers from central Government.

1.4 Consultation on the draft Action Plan

Consultation is an important part of the LAQM regime and the Council must consult appropriate agencies and organisations after developing options in the preparation of the Air Quality Action Plan. The following list includes those to be consulted:

1. Defra
2. Surrey County Council;
3. Neighbouring local authorities;
4. Other public authorities as appropriate; and
5. Bodies representing local business interests and other organisations as appropriate (potentially including representatives of the public e.g. community councils).

The LAQM. PG (09) guidance recommends that the consultation exercise should not last less than 8 to 12 weeks.

1.5 Summary description of the Elmbridge AQMAs

A brief description of the Elmbridge AQMAs is provided in Table 1. The actual AQMAs are shown in Figures 1, 2, 3, 4, 5, 6 and 7.

Table 1 Brief description of the Elmbridge AQMAs

Name	Location	Description	Traffic type
AQMA1	Esher town centre	Busy congested town centre near Sandown Park racecourse. Used by traffic from A3 to access other towns in the Borough and also southwest London.	Local and through traffic
AQMA2	Walton Road, Molesey	Main road linking suburban areas of East and West Molesey.	Local and through traffic
AQMA3	Walton on Thames	Narrow and busy congested town centre.	Mainly local traffic
AQMA4	Hampton Court Way, Molesey	Busy road leading to bridge over the Thames.	Predominantly through traffic
AQMA5	Cobham	Narrow and busy congested town centre	Mainly local traffic
AQMA6	Weybridge	Narrow and busy congested town centre. Traffic from M25 accessing other towns in the Borough	Local and through traffic
AQMA7	Hinchley Wood	Dual carriageway link to A3	Through traffic only

Figure 1 Elmbridge B.C Air Quality Management Area – Esher town centre

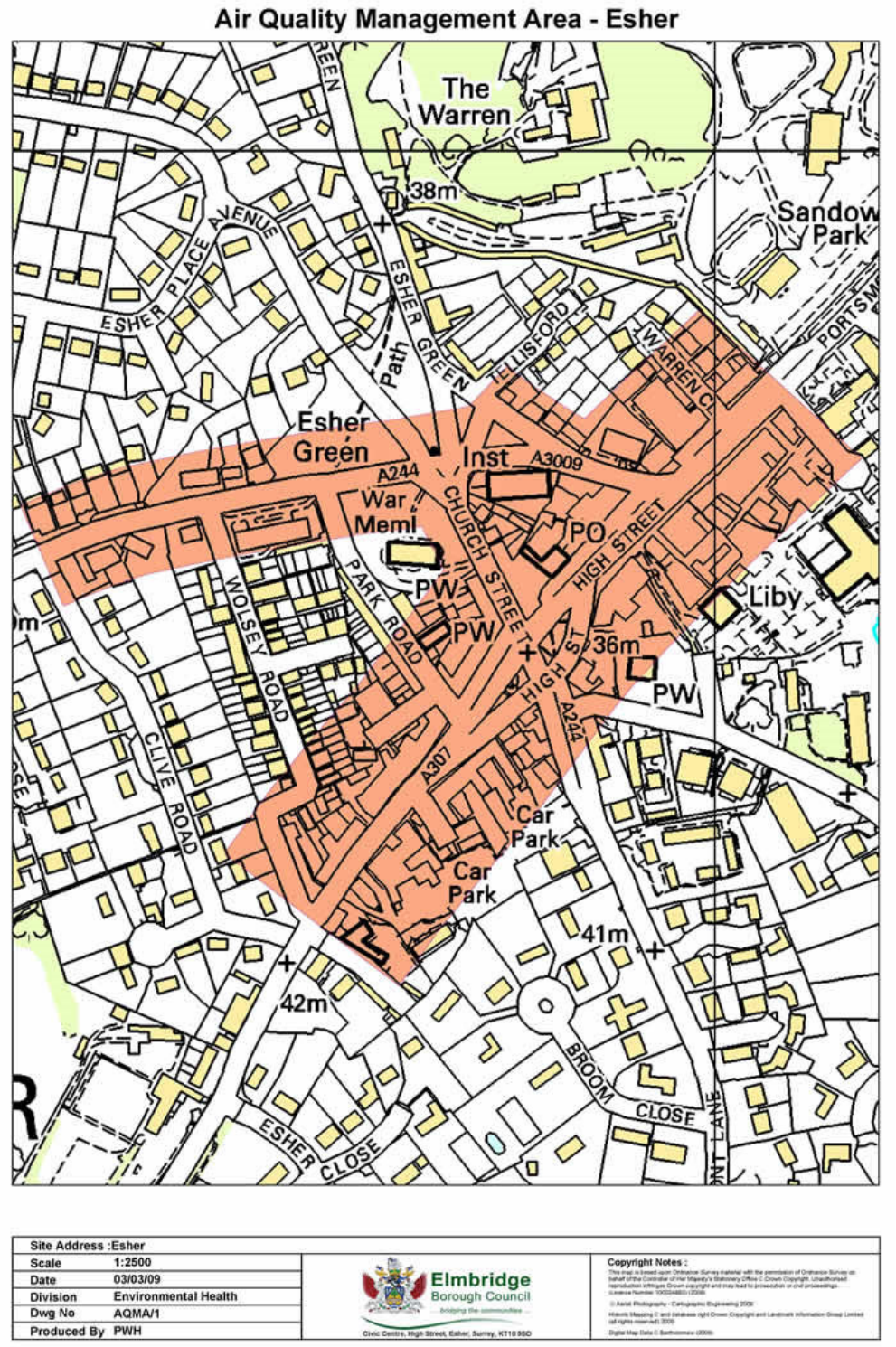


Figure 2 Elmbridge B.C Air Quality Management Area – Walton Road, Molesey

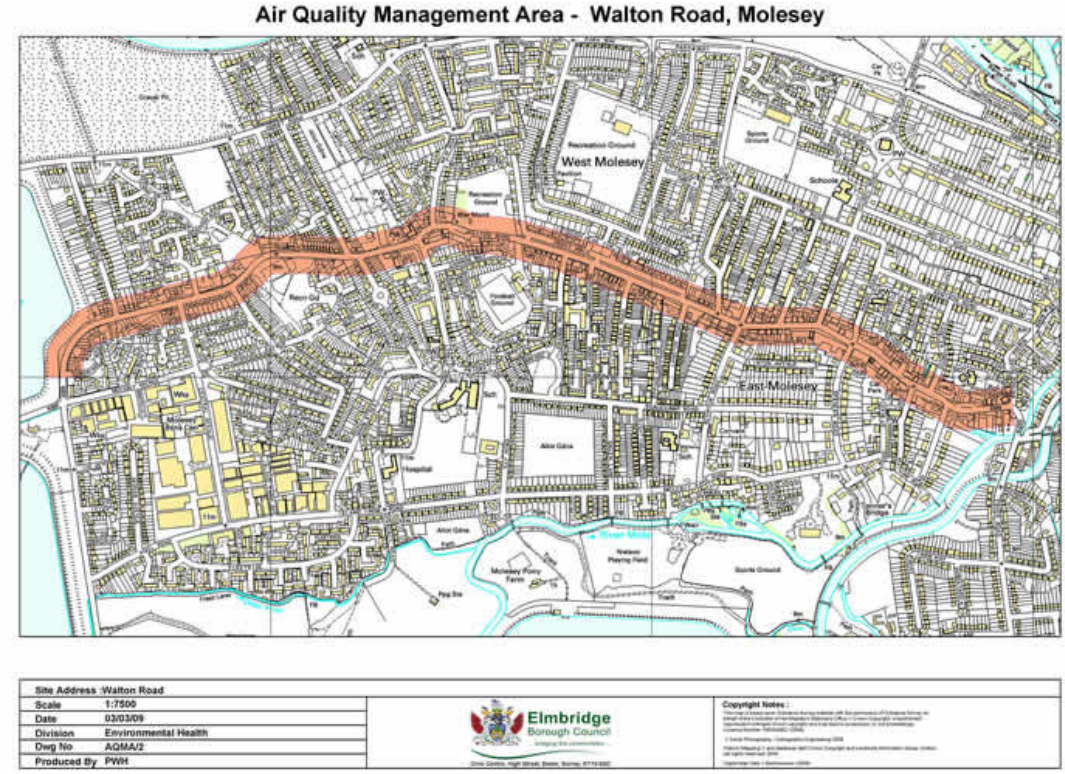


Figure 3 Elmbridge B.C Air Quality Management Area - Walton on Thames

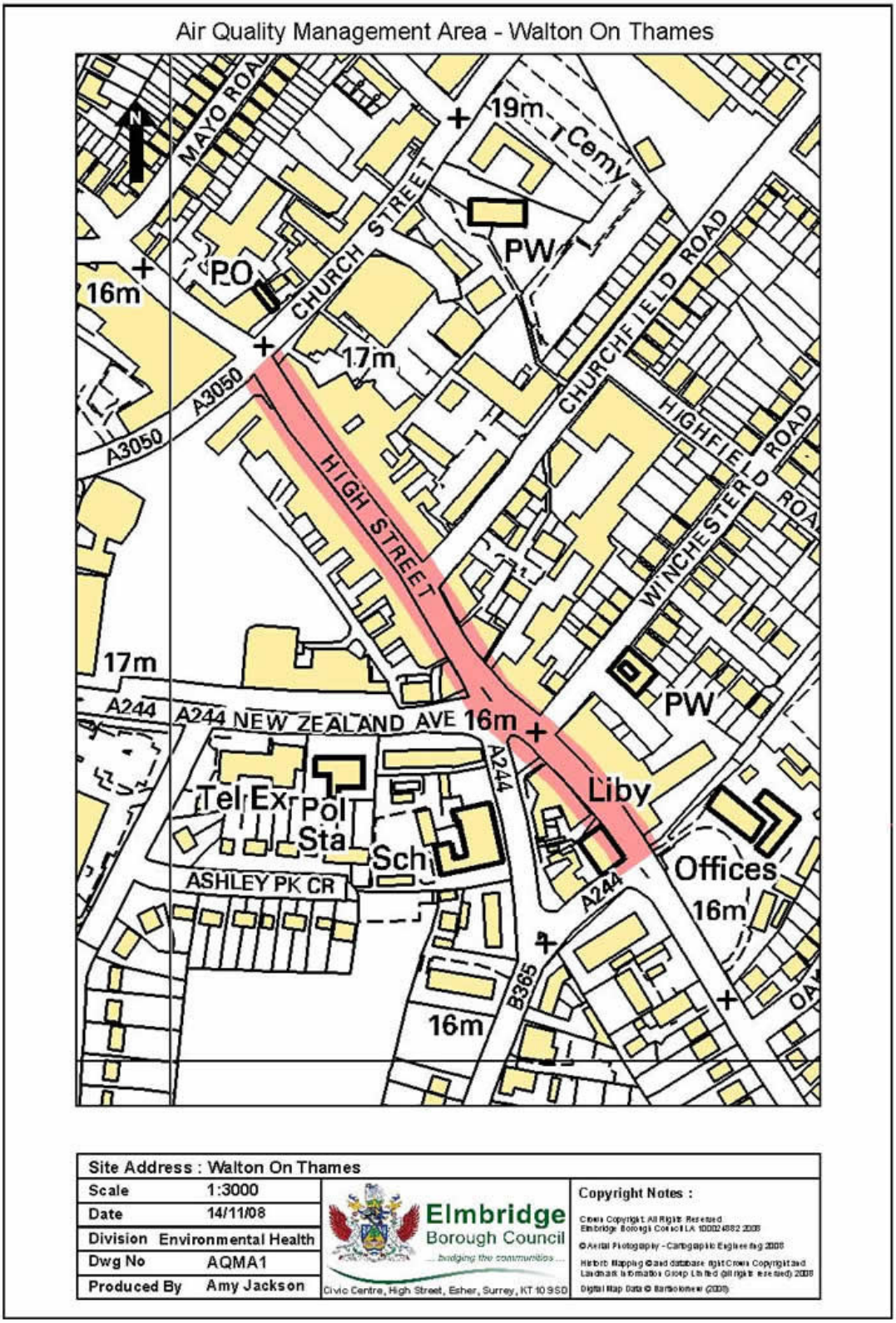


Figure 4 Elmbridge B.C Air Quality Management Area – Hampton Court Way, Molesey

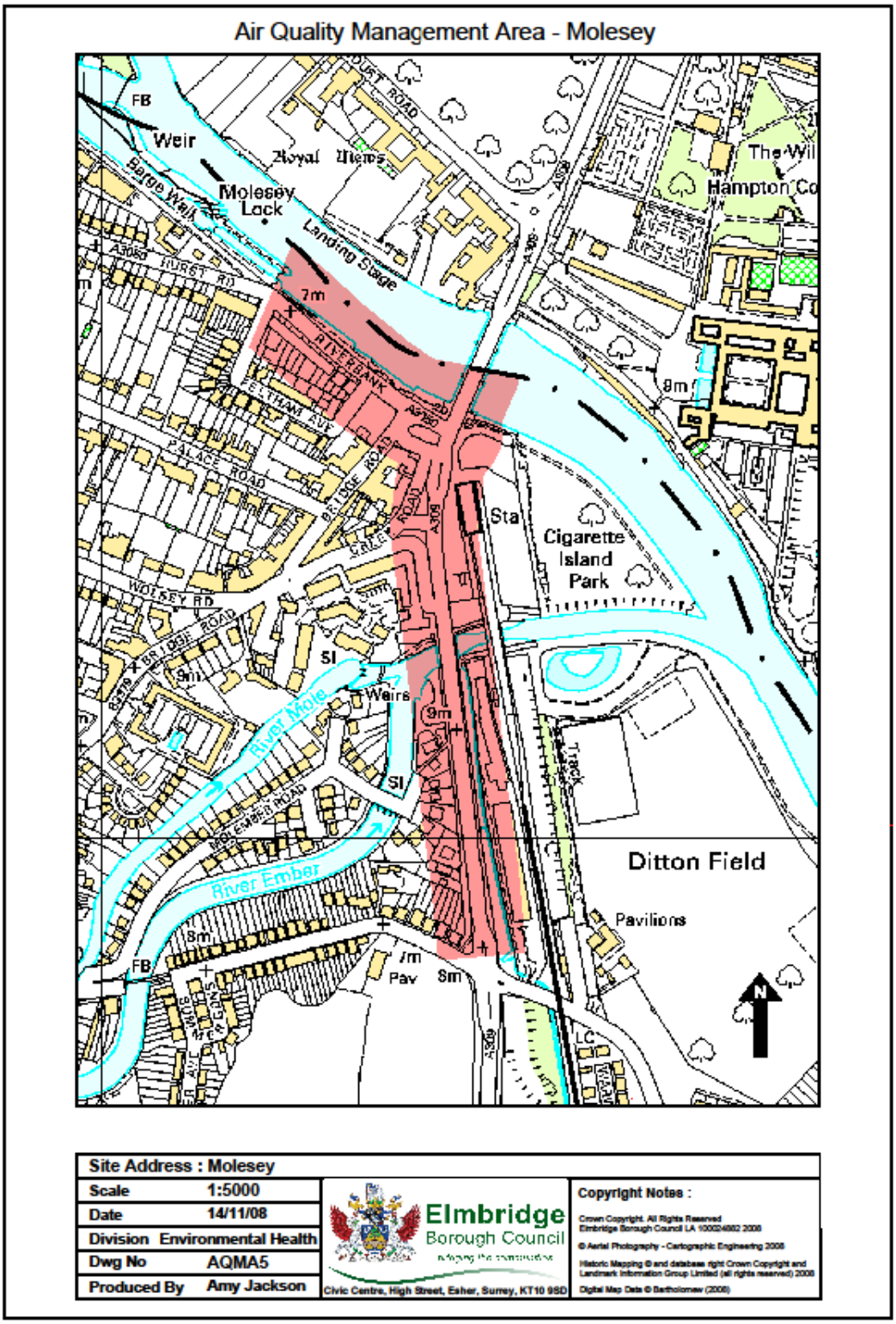


Figure 5 Elmbridge B.C Air Quality Management Area - Cobham

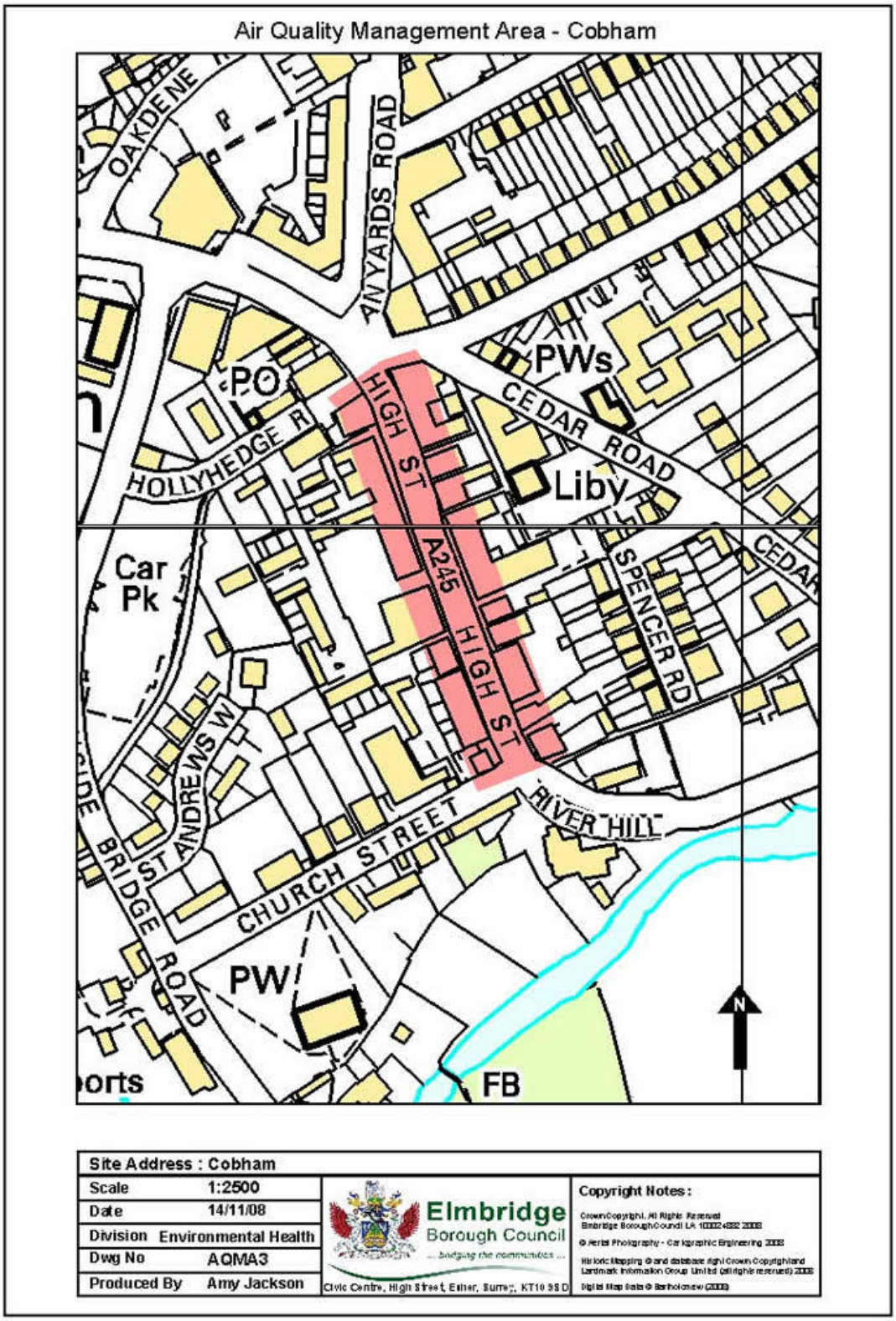


Figure 6 Elmbridge B.C Air Quality Management Area - Weybridge

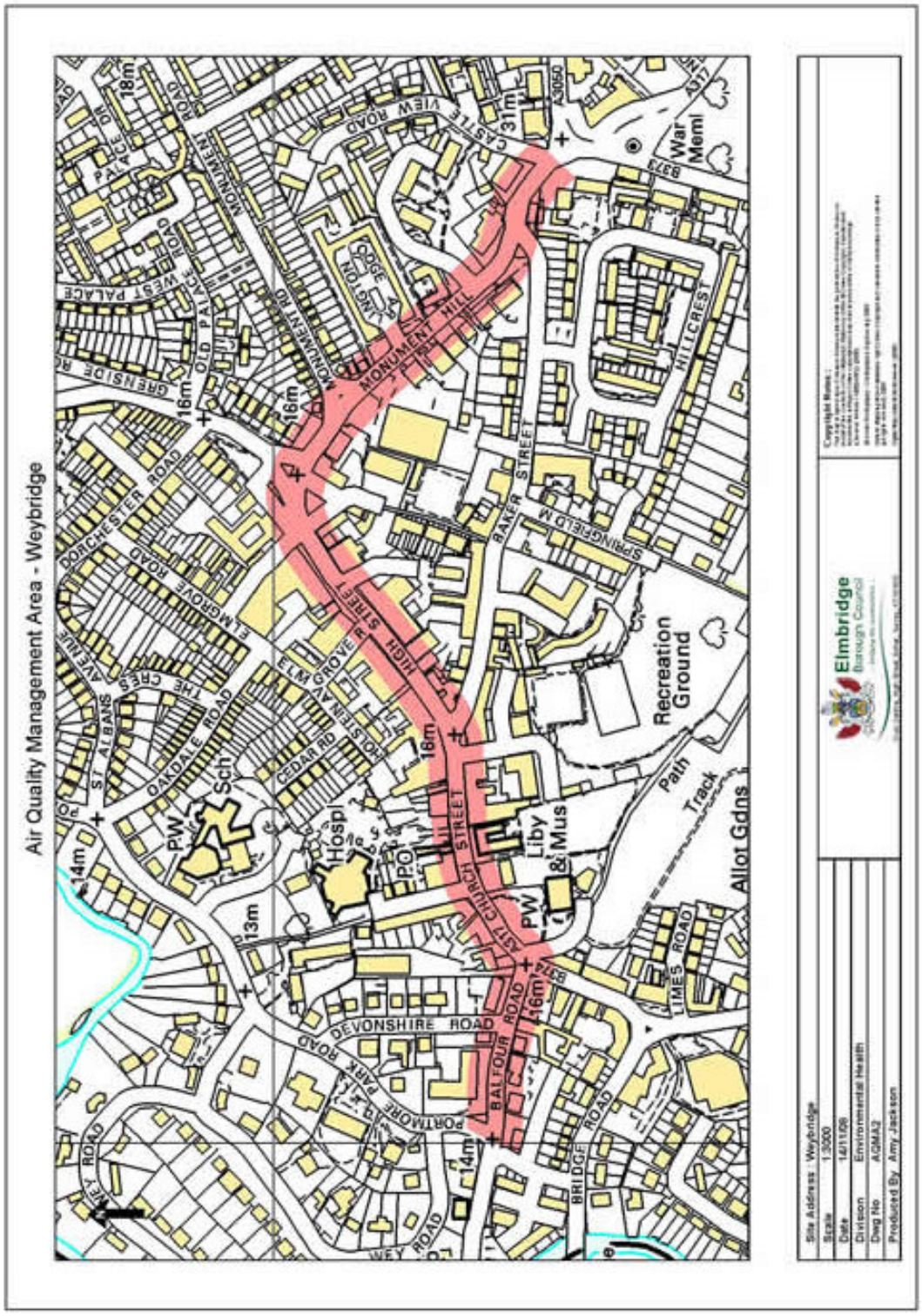
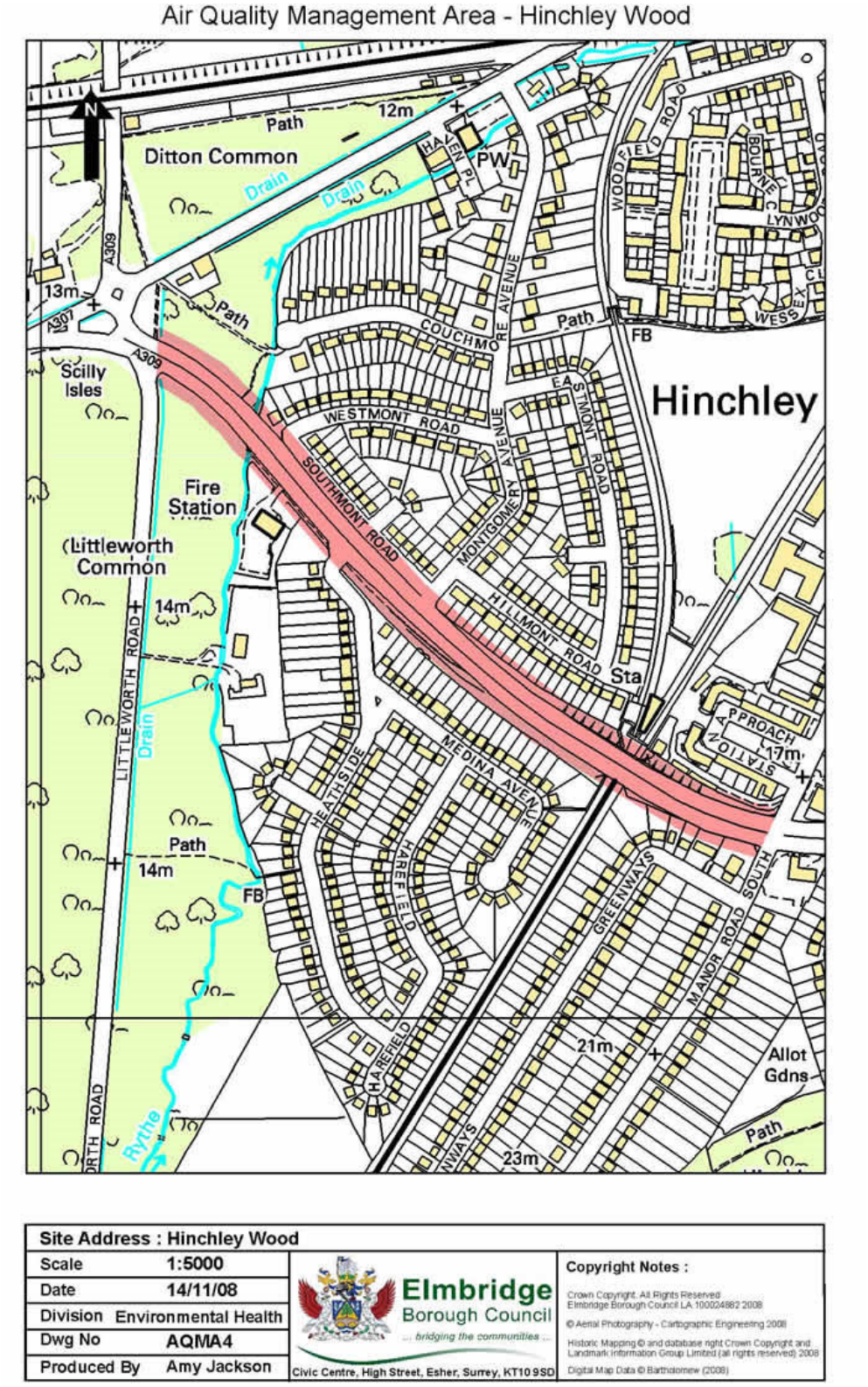


Figure 7 Elmbridge B.C Air Quality Management Area – Hinchley Wood



2. Summary of the air quality review and assessment findings for Elmbridge

2.1 Elmbridge Further Review and Assessments

Having designated AQMAs for NO_2, further assessments of air quality for the AQMAs were required. These further review and assessments of the Elmbridge AQMAs help to provide a technical justification for the measures contained in this Action Plan and allowed the Council specifically:

- To confirm the original assessment of air quality and to show that the Council was right to declare the AQMAs
- To calculate more accurately how much of an improvement in air quality will be required to deliver the air quality objectives within the AQMA
- To refine knowledge of the sources of air pollution so that the Elmbridge B.C AQAP is properly targeted
- To take account of any developments in local or national policy which have occurred since the AQMA was declared, which were not factored into the earlier assessment work

The most recent monitoring reported in the 2010 Further Assessment and the 2009 Updating and Screening Assessment continued to show that the NO_2 annual mean objective is being exceeded in the AQMAs (see bias adjusted monitoring results for the Elmbridge AQMAs in Appendix 2), although as mentioned above the Council is considering its position for some of its AQMAs, in the light of ongoing monitoring.

To better understand the improvement needed at a location to achieve the AQS objectives, it was necessary to determine the individual source emissions that contribute to the overall predicted pollution concentration. Both pollutant emissions and atmospheric processes, including meteorology, determine the pollution concentration at any given location. This is further complicated by the varying activities contributing to the source of emissions.

For NO_2, the contribution from the different sources could only be understood by examining modelled predictions of oxides of nitrogen (NO_x) concentrations. This is because NO_2 is mostly a secondary pollutant, formed from NO_x as a result of chemical reactions in the atmosphere.

2.2 Understanding sources of NOx in the Elmbridge AQMAs

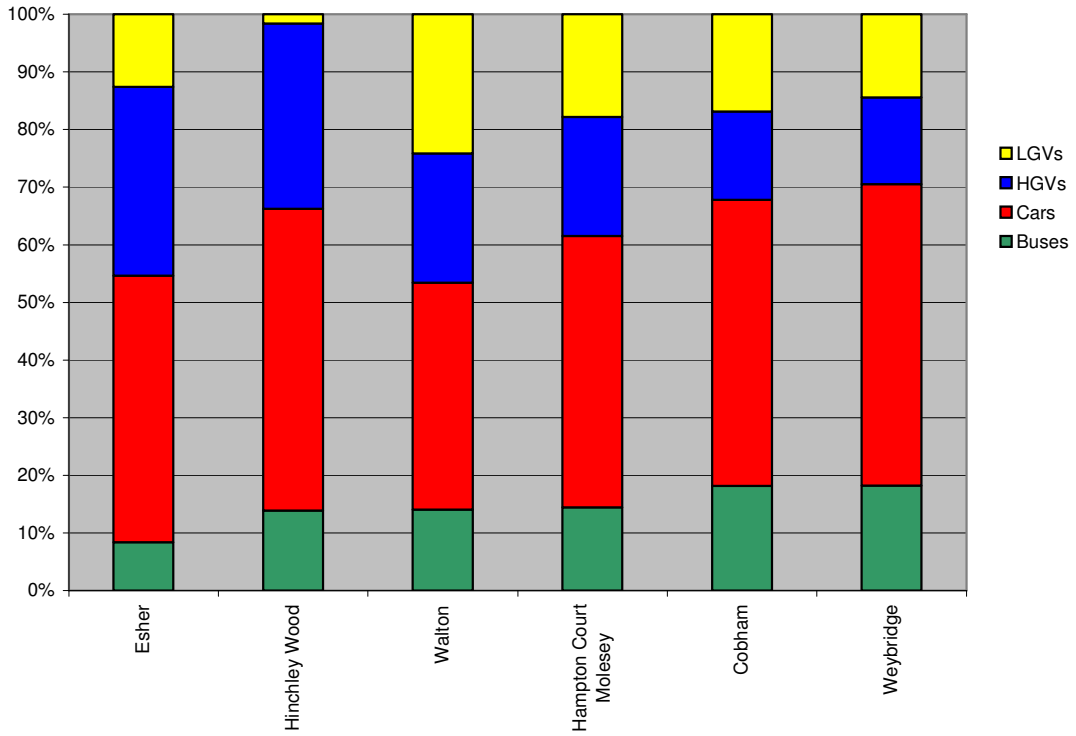
For the Further Assessments a series of locations were chosen across the individual AQMAs to help understand the source contribution of oxides of nitrogen (NO_x). These were based on the location of the Council's monitoring sites to provide a representative understanding of locations with predicted high concentrations of pollution. The sites were predicted to exceed the AQS objective for NO_2 by up to 22 $\mu g\ m^{-3}$ in the worst-case instance of the Weybridge 7 site (it is located very close to the kerbside). The mean for the sites exceeding the government's objective was 48 $\mu g\ m^{-3}$, although it is important to note that not all of the monitoring sites reflected relevant exposure. Furthermore some of the AQMAs exceeded by smaller amounts where there was relevant exposure; this includes the Hampton Court Way, Cobham and Walton Road AQMAs.

The results confirmed the importance of road traffic to air quality, with a typical contribution of 60% NO_x from road transport and the other 40% from various background sources (such as domestic heating, commercial combustion, etc plus also road transport from beyond the local area). This total for road transport was based on the median result of the locations examined (from the 2007 and 2010 Further Assessments). The source apportionment for the categories of vehicles examined, based upon the mean values within the AQMAs is shown in
Figure 8. In this figure the percentage contribution from Cars (including diesel and petrol cars), LGVs (including petrol and diesel vans), HGVs (both rigid and articulated) and Buses (including coaches) are given.

This shows that the Cars category provides the largest individual contribution of the road vehicle categories at all the locations examined. The mean contribution of Cars for all locations is

approximately 27%, although at the most polluted sites in the Hinchley Wood and Weybridge AQMAs the proportion increases to almost 50%.

Figure 8 Source contribution to modelled NOx concentrations at selected locations within the Elmbridge AQMAs (excluding background sources)



For the majority of sites the smallest individual contribution relates to Buses or LGVs, which total around 10% of the total contribution of NOx at each site for each of these sources. The contribution from HGVs is the greatest at the Esher and Hinchley Wood AQMAs and is over 20%, which is more than Buses and LGVs combined. At Walton and Weybridge however the proportion for HGVs is less than that of LGVs. This may be a reflection of access restrictions in both Walton and Weybridge town centres. In the Cobham and Hampton Court Way AQMAs there are roughly similar proportions from Buses, LGVs and HGVs.

2.3 Future forecasts of NO_2 in the Elmbridge AQMAs

The 2010 Further Assessment, following TG09 methodology provided indications when the AQS objectives would be met, this was based on the updated TG09 guidance (released January 2010), which provides adjustment factors that can be applied at roadside sites for future years. These factors are based on nationally modelled data and represent "best" estimates taking into account the changes in traffic activity, and emission factors for NOx and primary NO_2.

Using this method the annual mean concentrations of NO_2 will reduce into the future. This reduction reflects both the changes to vehicle flows and type (within the vehicle fleet) and the predicted reduction in background concentrations in the area over time. This predicted reduction into the future is based on forecasts, which include the uptake of new vehicles over time and the expected reductions in emissions as required by the agreed European emission standards. Thus the method of necessity includes many assumptions and therefore is idealistic.

Based on these forecasts, concentrations are predicted to meet the objectives within the AQMAs by 2015, with many achieving the objective by 2012. However based on the above comments these predictions should be considered as optimistic, since the factoring does not necessarily reflect reality as can be seen from the monitoring results in the Borough and elsewhere. Furthermore measured concentrations, particularly in London, are failing to fall in line with estimates and as a result, Department for the Environment, Food and Rural Affairs (Defra) commissioned research to investigate the issue. The findings from this research are to be reported shortly.

2.4 Testing air quality scenarios

Both Further Assessments investigated the amount of NOx required to meet the nitrogen dioxide objective. The 2007 Further Assessment considered this through modelling a future scenario and taking into account no traffic growth and also the expected changes in the vehicle fleet, based on national expectations (note – this change of vehicle stock rollover assumes that emissions will reduce as a result of newer less polluting vehicles replacing older more polluting vehicles). The test also assumed that the background contribution would also reduce into the future as discussed earlier. The results indicated that the government objective would be met at the monitoring sites, although areas close to the road centre lines in the AQMA would still exceed the objective. For reasons already discussed, this finding for the 2010 scenario was over optimistic, although it is worth noting, based on traffic count data that traffic levels over this period have not increased.

The more recent Further Assessment estimated the NOx reduction required to achieve government's AQS objective in each of the AQMAs examined, based on the requirements from TG09. This was based on monitoring sites within each AQMA; the extent of the nitrogen dioxide reduction needed was also reported. The estimates for both pollutants are shown in Table 2.

Table 2 Estimated reductions of NOx/ NO_2 (based on the further assessment modelling)

AQMA	Total NO_2 reduction ($\mu g\ m^{-3}$)	Estimated road NOx reduction ($\mu g\ m^{-3}$ and %)
Walton High Street	3.4	15 (21%)
Hampton Court Way, Molesey	10.7	41 (41%)
Cobham High Street	4.9	10 (28%)
Weybridge High Street	11.0	26 (30%)
Hinchley Wood	12.4	45 (46%)
Esher High Street	12.9	45.5 (46%)
Walton Road, Molesey	7.4	21.8 (30%)

These estimated reductions all indicate large reductions in NOx are required. It is, however, worth reflecting that these reductions are based on diffusion tube monitoring sites at locations that are either within street canyons, close to the kerb and in some instances close to stop start traffic. Thus the locations reflect worst-case situations and therefore the maximum extent of reduction required. It is also recognised that any reductions to the extent indicated may not be practical (or even fully desired).

Despite this and the uncertainties of the process, the above estimates are considered to provide an indication of the level needed to reduce NOx concentrations in each of the AQMAs.

2.5 Monitoring air quality

The monitoring of air quality in Elmbridge is crucial if well informed policy decisions are to be made on matters that could affect pollution levels in the air. The Council currently has three long-term continuous monitoring stations at:

Bell Farm School in Hersham (EL1) - this site opened in 2001 and is located at a background site within a school; as such it is representative of relevant public exposure.

Hampton Court Parade (EL3) - this site opened in 2008 and is located at a roadside site close to the A309; the nearest relevant public exposure for this site is approximately 10m away.

*Walton on Thames (EL4) - this site also opened in 2008 and is located at a roadside site in the High Street; as such it is representative of relevant public exposure, with the nearest facades within 3m.

*Note - the Walton on Thames site was closed recently and has been re-located to a new site in the Weybridge High Street AQMA.

The pollution levels measured at these stations, and results from the Council's NO_2 diffusion tubes network were used for validation of the modelling work undertaken in all review and assessment work.

All Elmbridge's Air Quality Reports can be accessed on its website at: http://www.elmbridge.gov.uk/envhealth/pollution/airqualitymonitoring.htm. For historical air quality data in Elmbridge see the London Air Quality Network website at: http://www.londonair.org.uk/

It is worth noting that the monitoring establishes the concentration of the pollutant measured at the location where it is undertaken. This concentration is averaged over the period of time for the objective; in the case of NO_2 it is the previous calendar year. Thus the concentration is related to both the prevailing pollutant emissions and the prevailing meteorology for that previous calendar year. In both instances there can be changes between years and therefore there is inter annual variation between the sets of measurements for the same location. This, for example, can mean that the measured concentration is higher in a subsequent year (as well as a previous year). As a result the objective can be achieved one year and not the next.

To take account of this inter annual variation some authorities have adopted an estimated margin of uncertainty (of 10%) with the objective. This in effect means that to meet the objective an annual mean of 36µg m^{-3} must be achieved. A similar finding would be found using probabilistic methods.

3. Building upon existing plans for Elmbridge

3.1 Introduction

The actions that the Council can propose in an Action Plan are clearly not in isolation to actions that are already being implemented by both the Council and other bodies. This chapter sets out the context; including actions that Elmbridge Borough Council is currently taking and intending to take to improve air quality in the Borough. The actions described include those taken by the Council on its own, and those taken in partnership with the local community, local businesses as well as other regional and national agencies.

The Action Plan seeks to be consistent and build on other Council actions such as the Corporate Plan, Elmbridge Sustainable Community Strategy, and the newly emerging Local Development Framework. Importantly it also seeks consistency with Surrey County Council's Local Transport Plan (see chapter 4).

The Action Plan reflects that air pollution arises from a wide variety of sources including actions relating to domestic, commercial and industrial activities as well as the road transport (which is the most pertinent for the purposes of this Action Plan). The Action Plan draws on all the measures that the Council is taking where air quality will benefit and also seeks to show how these actions have a wider significance. The wide range of strategies and measures provided is intended to highlight those that can improve air quality in the Borough and are complementary to this Air Quality Action Plan.

3.2 The Elmbridge Sustainable Community Strategy

The Council has a statutory duty to produce a Sustainable Community Strategy. The purpose of this Strategy is to improve the quality of life for the communities of Elmbridge. It has been produced in line with government guidance which says that local organisations should work together to 'promote and improve the economic, social and environmental well being in their area for both now and in the future. The second Sustainable Community Strategy runs from 2006-15 and sets out the following vision for Elmbridge, on which the Council's corporate vision is based:

"Our future vision for the Borough is based on what you have told us. It is of an Elmbridge:

- with safe and healthy communities, vibrant town centres and a strong local economy;
- with better transport connections, plenty of community facilities, affordable housing and efficient public services;
- with a thriving and inclusive Borough which integrates all sectors of the community;
- where those with extra needs of whatever kind can better access support from their communities;
- where there are reducing inequalities and people are able to make the most of the opportunities open to them;
- which retains its attractive, green and unique character and where the communities work together to reduce the impact of modern day living on our environment;

Together, we can work with you towards making Elmbridge an even better place for current and future generations."

To deliver on the vision, the Sustainable Community Strategy contains long-term aims and medium-term priorities for six key themes:

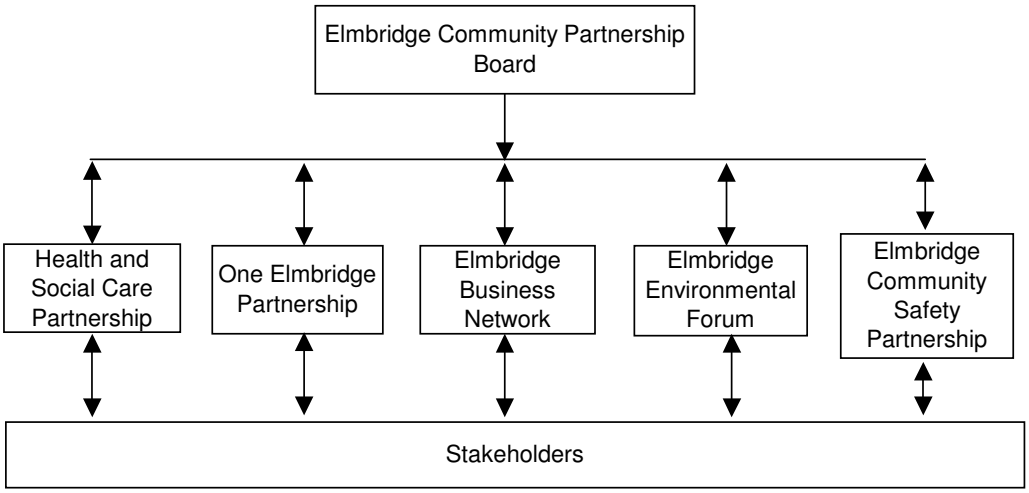
- Protecting and Enhancing the Natural Environment
- Promoting Health and Well Being
- Enhancing the Local Economy
- Building Safer Communities
- Fostering Inclusion
- Partnership Development

In addition, the Strategy contains four crosscutting issues, reflecting their importance and influence across the six main themes:

- Local Development Framework
- Housing
- Equality, diversity and faith
- Culture

Elmbridge Community Partnership

The Council cannot deliver on the broad-ranging priorities from the Sustainable Community Strategy alone. Instead, delivery is co-ordinated through Elmbridge Community Partnership (ECP), which is the "local strategic partnership" for the Borough and has representatives from the public, private, voluntary and community sectors. The ECP consists of a Board plus five delivery partnerships which each oversee an action plan of joint activities relevant to a specific theme of the Strategy. The structure of the ECP is set out below:



Surrey Sustainable Community Strategy and Local Area Agreement

Surrey County Council is also required to work with other organisations to prepare a Sustainable Community Strategy for the whole county of Surrey of which Elmbridge is part. The Surrey Sustainable Community Strategy is overseen by the Surrey Strategic Partnership (SSP), which has a similar structure of themed delivery partnerships to the ECP. The Leader of the Council represents Elmbridge Borough Council on the SSP Leadership Group and other Council representatives sit on different elements of the Partnership.

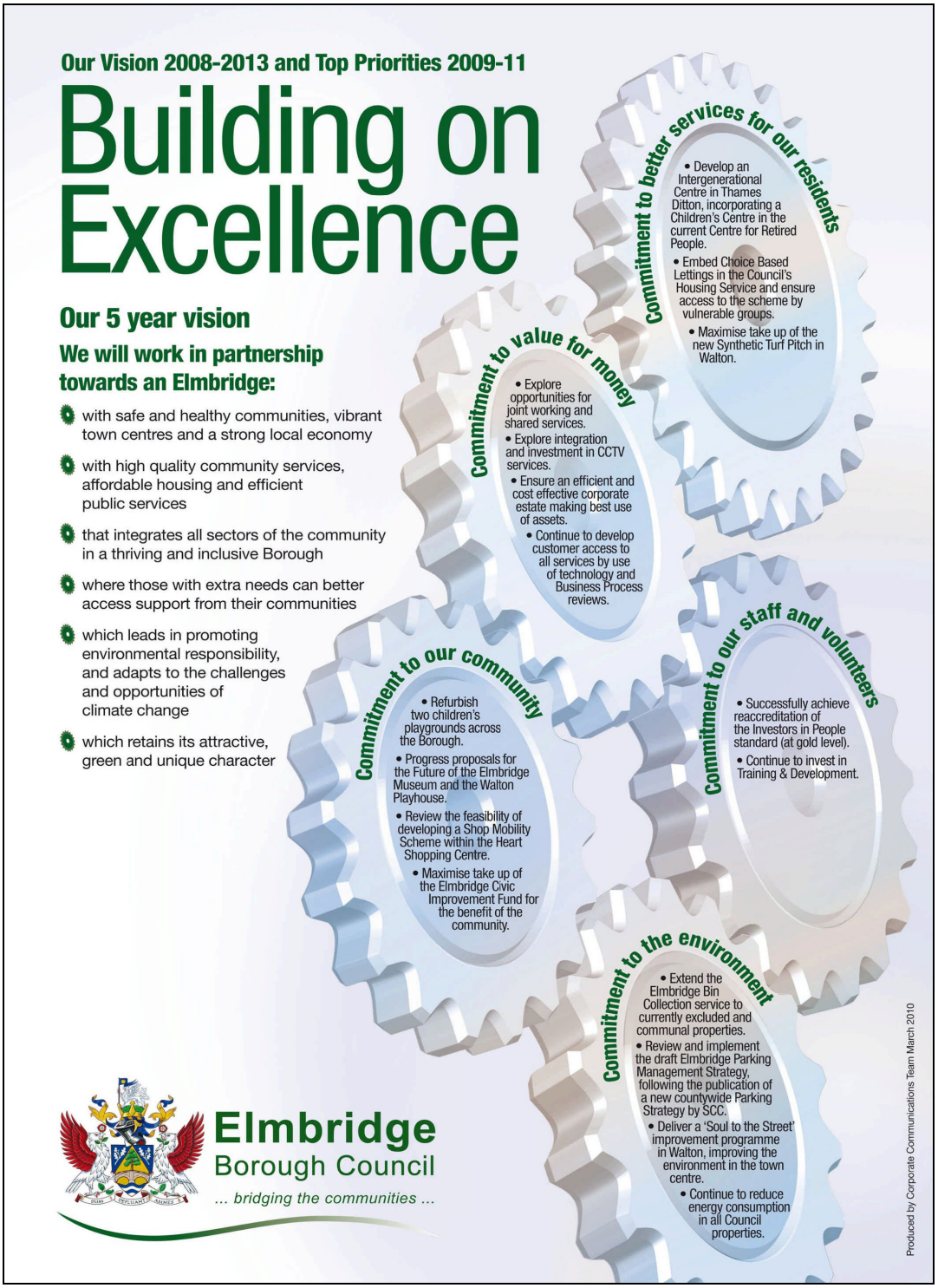
Surrey Local Area Agreement 2008-11

One of the key delivery mechanisms for the Surrey Sustainable Community Strategy is the Local Area Agreement (LAA). This is a set of targets for improving the area over three years, agreed between the area and the Government. Elmbridge Borough Council is required to have regard to the targets in the LAA that relate to it, this is achieved through:

Participating in relevant countywide projects run through the SSP
Participating in local partnership projects run through the ECP that contribute to the delivery of the LAA
Developing our mainstream services with reference to the LAA

3.3 The Council's vision

The Council sets out its vision 2008 – 2013 for building on excellence in its Corporate Plan for 2010/11. The information below shows how the Council intend to do this. It consists of the Council's:
'Vision' - these are the principles that guide the medium/long term plans; and
'Top priorities' - these are shorter term priorities that help move us nearer to our overall Vision.



3.4 Elmbridge Planning Policies

The Planning system plays a pivotal role in shaping and protecting the quality of our urban and rural areas thus making a central contribution to our well being and quality of life by:

- Creating opportunities for development;
- Conserving environmental quality;
- Achieving sustainable development;
- Promoting public participation; and
- Helping to protect the rights of the individual.

In the shorter term and on its own, the planning system will not solve Elmbridge's air quality problems. However it does provide a vital part in conserving existing environmental quality and achieving future sustainable development

The Local Development Framework (LDF) will replace the Local Plan. It will guide planning and development in Elmbridge to 2026. The LDF is made up of a number of important planning documents, the key one being the Elmbridge Core Strategy. This is a portfolio of planning documents, individually known as Local Development Documents, which deliver the spatial development strategy for the Borough and builds upon existing local and regional strategies and initiatives, in particular the Sustainable Community Strategy.

The Elmbridge LDF currently consists of the following adopted documents:

Local Development Scheme (LDS) – this sets out the scope and timetable for producing the LDF. It explains what Local Development Documents (LDD) are going to be produced, by whom and when, with key dates from initial preparation to adoption. It also explains the purpose and scope of each LDD and the role of each within the LDF.

Statement of Community Involvement (SCI) - this sets out the standards to be adopted by the Council for engaging the community and key stakeholders in the plan-making process. Its aim is to achieve greater public involvement in the preparation of all the documents in the Local Development Framework (LDF) and in significant Development Control decisions.

The following Development Plan Documents (DPD) and/or Supplementary Planning Document (SPD) have been adopted:

Planning Obligations and Infrastructure SPD - information on infrastructure contributions to be made for all new planning applications for additional housing and/or commercial floor space greater than 100sqm.

The following DPDs and/or SPDs are currently being prepared:

Core Strategy DPD - the principal DPD that sets the long-term vision and overarching policies for the area. The new planning system places an emphasis on strengthening community and stakeholder involvement in the planning process. Following consultation, the Elmbridge Core Strategy was submitted to the Secretary of State for examination by an independent Planning Inspector to decide whether the document is legally compliant, sound and fit for purpose.

The following DPDs and/or SPDs are also timetabled for preparation:

Development Management and Site Allocations DPD - more detailed policies for use by development control in assessing planning applications and will allocate and safeguard specific sites for development.
Affordable Housing SPD
Revised Planning Obligations and Infrastructure SPD (including Thames Basin Heaths)
Sustainable Design SPD
Greenspace Strategy SPD

3.5 Sustainable Elmbridge

"Sustainable Elmbridge" (adopted in 2006) sets out Elmbridge Borough Council's approach to sustainability. It is framed within the context of the Sustainable Community Strategy and is intended to demonstrate how the Council will support the objectives. It captures what is already being done and also what is planned. It is intended to inform local residents and businesses about the Council's activities in pursuing a sustainable future for the Borough.

The Council interprets sustainability as

> "The safeguarding of our environment and the adaptation of our lifestyles to minimise the impact on the environment through the promotion of local choices in terms of transport, housing, employment and other components that contribute to a fulfilling life"

The Borough Council is also responsible for many services including planning, refuse collection and recycling, tourism, benefits, licensing, public health, parks and open spaces, housing advice, recreation and leisure. The Council recognises that the provision of these services has impacts on the Borough, and that the Council has a strong community leadership role, anticipating and leading change.

Thus the Council has two main roles:

- as a large public organisation with staff and buildings that works with other partners and contractors – a consumer on a large scale but also a possible exemplar and low environmental impact organisation
- as provider of sustainable services and policy development and implementation which influence outcomes through environmental good practice.

"Sustainable Elmbridge" is intended to demonstrate the areas where the Council is focusing on sustainability, what has already been achieved and what more there is in the pipeline.

It focuses on the: Built Environment; Natural Environment; Waste; Pollution Control; Water, Energy and Accessibility Transport, Strengthening Communities, Health and Well-being; Procurement and the Local Economy. All Council sections have adopted the Sustainability Action Plan and the actions identified below will help deliver the overall aim within the Corporate Plan. This will ensure service delivery contributes to the achievement of sustainable development for Elmbridge.

In particular in the delivery of its services (many of which are inter linked), the Council will seek to:

Use the Council's Development Planning process to extend the work with existing communities and developers to achieve sustainable communities.
Protect the diversity of nature and open spaces through delivery of the Council's Countryside Strategy.
Continually improve its environmental performance by involving staff in reducing resource consumption within Council activities, in particular energy efficiency and waste minimisation.
Promote and encourage waste minimisation, reuse and recycling and general resource efficiency to the community.
Ensure that levels of environmental pollution are kept to a minimum and where possible encourage improvement including updating the Borough Air Quality Strategy.
Promote and encourage the conservation in the use of energy and water, reuse and recycling of water and the use of renewable energy.
Promote reducing the need for travel and greener travel where possible.
Through the co-ordination of the Council's Community Partnership team the Council aim to further strengthen local communities.
Improve people's health as a key sustainable development objective, encouraging the purchase of goods and services locally and promoting healthy diet, lifestyle and exercise.
Integrate sound sustainability principles through the procurement of its goods and services.

3.6 Elmbridge Air Quality Strategy

In the Government's latest policy guidance (PG09), it is recommended that local authorities develop a local air quality strategy to provide over arching principles. The Council was one of the first authorities to produce its own Air Quality Strategy. The Council adopted this in 2002. The Strategy established a commitment to undertaking air quality monitoring and providing information to the public. The early review and assessments of air quality in the Borough did not identify the need to designate an Air Quality Management Area, although subsequent assessments confirmed that small parts of the Borough do exceed the Government's objectives.

The strategy also sets out the general principles of seeking methods to minimise emissions and linking with neighbouring local authorities, Surrey County Council, residents, organisations and businesses to achieve both consistency and an integrated approach to air quality. This included taking air quality into account as a material consideration when assessing planning applications and applying legislative controls to minimise pollution. Thus the Strategy set out an early commitment to seek to improve air quality that is now taken forward in this Action Plan. It is however appropriate to review this as a part of this Action Plan to ensure that it still meets with the latest guidance.

Action Plan Measure 1

Local Development Framework

In guiding planning and development in Elmbridge, the LDF plays an important role in ensuring that the potential detrimental impacts from new developments are minimised; these impacts include local air quality. The Council already considers air quality during the development planning process and the designation of the AQMAs presents an additional focus on local air quality during construction and operational phases of new developments. It is particularly important that proposed developments that may exert an impact on the AQMAs should be subject to specific consideration in view of the potential impact on local air quality. Furthermore it is also important that all practicable mitigation measures are implemented.

Guidance on this issue has been provided by Environmental Protection UK and by the Beacon Councils, selected under the heading of "Delivering cleaner air". The Council will consider how this can be adopted to enable a consistent approach to air quality impact assessment in the Elmbridge AQMAs and beyond ensuring that the potential effects of future development on air quality are minimised and that appropriate mitigation measures are provided.

Action Plan Measure 2

Integration of Air Quality with other Council Strategies

The Council recognised the benefit of increasing the general awareness of air quality issues and the need to integrate air quality considerations within existing and future Council plans and strategies.

4. Transport policies covering Elmbridge

4.1 Background

Road transport has been highlighted as the principal source of pollutant emissions in the Council's AQMAs. Transport, however, also plays a significant part in our daily lives, so it is essential that policies and plans regarding transport integrate with other initiatives in supporting the achievements of the Council's priorities.

An important objective of this Action Plan is balancing the need to travel with the need to improve quality of life, including air quality. This can be achieved through working to integrate and promote initiatives that can reduce congestion, improve local environments and encourage healthier and safer lifestyles.

As highlighted previously the air pollutants of concern in the AQMAs arise principally from road transport emissions. The Highways Agency (HA) has responsibility for core trunk routes in Elmbridge (although all of these roads are outside the Elmbridge AQMAs) and Surrey County Council (SCC) has responsibility for non-core trunk routes and other roads (these are the roads found within the Elmbridge AQMAs). Hence the Borough Council does not have direct responsibility for roads and so any plans to control pollution and improve air quality needs to be in partnership with the SCC (and to a lesser extent with the HA). The Council however has an important role in ensuring that its concerns and intentions are integrated within those of its partners and also for lobbying for improvements within its communities.

The tighter vehicle emission standards required by the EU are amongst the most important air quality management tools for reducing emissions. In recent years these standards have resulted in improved air quality for many pollutants. This remains an ongoing process, which will continue into the future, resulting in the replacement of older more polluting vehicles with newer less polluting vehicles. Any expected improvement however is lessened by increases in both the numbers of vehicles on roads and also the distances travelled.

Furthermore recent air quality monitoring data, from nearby London (King's College London, 2008) and also within the Borough, confirms that the expected air quality improvements have not been forthcoming. King's College London and others are undertaking scientific research to determine precisely the reasons for this lack of improvement. Meanwhile Defra, in response to a question to its air quality helpdesk, acknowledged that air quality concentrations are not reducing in line with previous expectations and are also investigating the matter.

The initial conclusion to be drawn from the above discussion is that additional measures are needed to reduce air pollution and improve air quality in the AQMAs so as to achieve the required air quality standards. The importance of the integration of this Action Plan with the Surrey County Council's plan is therefore a key objective to improving air quality within the Borough Council's AQMAs and also elsewhere within the Borough.

4.2 Surrey transport policies

The existing Surrey County Council (SCC) Local Transport Plan (LTP2) covers the period 2006/07 to 2010/11. A new LTP (LTP3), which is to be called the Surrey Transport Plan, is in preparation. The new plan commences in 2011 and looks ahead to 2026. Thus the Elmbridge Air Quality Action Plan overlaps between the two LTPs.

4.2.1 LTP2

In areas where poor air quality is mainly caused by the traffic on Surrey County Council's road network, Surrey County Council is required to work with the Council to put forward proposals for tackling the problems. The second local transport plan (LTP2) produced by SCC recognised this requirement. Surrey County Council also recognised that its LTP policies will be important in ensuring that the relevant air quality objectives are achieved in Elmbridge and elsewhere across Surrey.

LTP2 included a strategy, objectives, targets and an implementation programme setting out transport improvements that need to be carried out. The Surrey Community Strategy (see earlier) provided the broad framework and vision for LTP2 and the objectives for LTP2 were formulated on the basis of key principles, including:

> Continuity of the objectives in the first LTP whilst acknowledging the shift in emphasis needed as priorities change
>
> The imperative to integrate transport policy with other policies (including health, education and social inclusion) and to liaise with other departments within SCC (including planning and education)

The four agreed priority areas for the second LTP were:

- Congestion
- Accessibility
- Safety
- Environment.

Maintenance was also identified as a priority under the Best Value regime.

From these, an overall summary objective was devised for each of the headings and a second step was to identify which of the indicators were most relevant to the objectives. These indicators were outcome based and generally intended to reflect countywide progress.

LTP2 identified a number of objectives and many of these are still pertinent to the Elmbridge AQMAs. These included:

- Objective 1 - Tackling congestion (particularly the growth of peak hour traffic flows into main urban centres and area wide traffic)
- Objective 2 - Increasing accessibility to key services and facilities (including increasing bus patronage and cycling)
- Objective 4 - Enhancing the environment and quality of life (through reducing the concentrations of NO_2 at a key location in Air Quality Management Areas (Spelthorne and other districts if identified as necessary), limiting growth of traffic on Surrey's roads, reduce total emissions of NOx and PM_{10}.

The measures within LTP2 aimed to change traffic patterns and so reduce pollution levels. However, as it was difficult to follow the success of such measures, Surrey County Council developed intermediate outcome indicators that related to reducing emissions including:

> Limiting traffic growth on county roads.
> Increasing the proportion of buses that have engines that are Euro III compliant.

LTP2 also recognised that many indicators for the other shared priorities (e.g. tackling congestion by limiting growth of area wide traffic) were consistent with and fed directly into the indicator for enhancing the environment and vice versa.

Surrey County Council further recognised that most of the measures it could put in place would be those principally aimed at tackling other shared priorities. However, emissions of pollutants were recognised as worst from slow moving or stationary traffic so most measures to tackle congestion were considered generally to also improve air quality.

Other action to improve air quality included passenger transport measures such as Quality Bus Partnerships and Freight Quality Partnerships. Specific measures included the introduction of new low-emission vehicles.

In LTP2 the focus was those AQMAs established early on in the preparation phase, as a result Elmbridge AQMAs were not specifically identified. The Council, therefore, will continue to work closely

with SCC and have made recommendations that specific measures are included for the Elmbridge AQMAs in the new LTP.

4.2.2 Surrey Transport Plan (Draft)

The proposed vision for the Surrey Transport Plan builds on that for the previous LTP as shown in Table 3 (extracted from Surrey Transport Plan: Proposed Vision and Objectives – Consultation document (see below)).

Table 3 Objectives proposed for Surrey Transport Plan compared to the LTP2 objectives and DfT's national goals for transport

Objectives proposed for Surrey Transport Plan	LTP2 objectives	DfT's national goals for transport
Effective transport: To meet the needs of residents, business and visitors in Surrey by maintaining and improving the transport network.	Improving management and maintenance of our transport network. Increasing accessibility to key services and facilities.	1) Support national economic competitiveness and growth, by delivering reliable and efficient transport networks. 4) Promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society.
Reliable transport: To improve the reliability of transport in Surrey.	Tackling congestion to limit delays.	1) Support national economic competitiveness and growth, by delivering reliable and efficient transport networks.
Safe transport: To improve the safety and security of the travelling public in Surrey.	Improving road safety and security.	3) Contribute to better safety, security and health and longer life expectancy by reducing the risk of death, injury or illness arising from transport, and promoting travel modes that are beneficial to health.
Sustainable transport: To provide a transport system that protects the environment, keeps people healthy and provides value for money.	Enhancing the environment and quality of life.	2) Reduce transport's emissions of carbon dioxide and other greenhouse gases, with the desired outcome of tackling climate change. 3) Contribute to better safety, security and health and longer life expectancy by reducing the risk of death, injury or illness arising from transport, and promoting travel modes that are beneficial to health. 5) Improve quality of life for transport users and non-transport users, and promote a healthy natural environment.

From this table it can be seen air quality directly relates to both the Safe Transport objective (as transport emitted pollutants contribute to the ill health related to air quality) and the Sustainable

Transport objective (both the reduction of carbon monoxide and other GHG pollutants (which includes NOx) and the improvement of the quality of life).

As such air quality is seen as a **High Priority** for Surrey County Council.

This is further confirmed in the SCC Technical note - Surrey Transport Plan: Relationship between policy background, vision and objectives, core strategies and programmes produced in September 2010.

From this it can be seen that the Surrey Transport Plan Air Quality Strategy is one of the core strategies, which will make up the Surrey Transport Plan (at the time of writing this is subject to consultation, hence the details are given in *italics* below).

The proposed aim and objectives for the Air Quality Strategy are:

Aim:

To improve air quality in Air Quality Management Areas on the county road network such that Surrey's Borough and districts are able to revoke these areas as soon as possible, with regard to other strategies and funding constraints.

Objectives:

1. To incorporate transport measures and interventions in the appropriate infrastructure schedules, for future implementation as and when funding becomes available, in order to reduce air pollution from road traffic sources in designated Air Quality Management Areas, and with regard to other strategies; and,

2. To consider air quality impacts when identifying and assessing transport interventions and measures in Surrey.

The focus to be applied on AQMAs is given below:

As and when the county council contributes to the development of an Air Quality Action Plan for an AQMA, the county council will work with Borough or district to:

- *Incorporate appropriate physical measures in infrastructure schedules, and implement as and when funding becomes available;*
- *Identify and agree options for the enforcement of existing regulations for parking, loading and utility works schedules, and implement as and when funding becomes available;*
- *Identify and agree options for supporting travel choices that are better for air quality, and implement as and when funding becomes available; and,*
- *Consider air quality issues in Borough and District-led planning processes and areas of responsibility.*

Specific transport measures and interventions are used to deliver these key elements. Each measure or intervention should achieve one or more of the following outcomes:

- *Restrain or reduce traffic volumes;*
- *Reduce traffic delays;*
- *Reduce tailpipe emissions of air pollutants per vehicle; or,*
- *Improve the provision of information to people on the air quality impacts of their travel choices.*

Further information on each of the elements is given below.

Incorporating physical measures in infrastructure schedules

Option appraisal of potential physical transport measures and interventions will be carried out. The county council, working in partnership with the Borough or District, will incorporate agreed transport measures and interventions in the appropriate infrastructure schedules. These will subsequently be brought forward as and when funding becomes available.

The county council will closely track ongoing air quality monitoring in order to determine whether or not there is a need to implement further measures and interventions. The county council will be minded to bring forward lower cost transport measures and interventions first.

Enforcement of existing regulations

A review of the enforcement of existing parking and loading regulations, of the enforcement of utility works schedules and the potential for roadside emissions testing will be undertaken. Agreed options can be implemented as and when funding becomes available.

Supporting travel choices that are better for air quality

A review of behaviour change-type options for supporting travel choices that are better for air quality will be undertaken. Agreed options can be implemented as and when funding becomes available.

Borough and District-led planning processes and responsibilities

The county council will support the Boroughs and Districts to consider air quality issues in planning processes and in relation to other areas of responsibility such as taxi licensing procedures.

The county council will also work with other partners and stakeholders as required, such as neighbouring authorities and developers.

The Surrey Transport Plan will include other core strategies that have direct links with air quality, as follows:

Congestion Strategy;
Passenger Transport Strategy: Part 1 - Local Bus and Part 2 - Information;
Parking Strategy; and
Transport Climate Change Strategy.

Other relevant core strategies to follow include the Freight Strategy, Cycling Strategy, Travel Planning and Information Strategy, Walking Strategy and Surrey Transport Asset Management Plan.

In summary, Surrey County Council in its draft for the Surrey Transport Plan will support Elmbridge Borough Council in meeting its statutory duty under the Part IV of the Environment Act 1995, including the provision of infrastructure (when funding becomes available) and other support.

Action Plan Measure 3

Surrey Transport Plan

Road transport has been identified as the principal source of NOx within the Elmbridge AQMAs. It is important that this Air Quality Action Plan supports and considers both existing or forthcoming transport plans, and vice versa. Therefore some integration of the Action Plan with the forthcoming Surrey Transport Plan is considered essential and represents a strategic and integrated approach to local air quality management, as it presents a key platform for delivering initiatives aimed at improving local air quality.

4.3 Road network

The LTP 2 provided a perspective on road transport in Surrey (including Elmbridge). In 2003 (see figure 3.3 of LTP2), car ownership across Surrey rose to a level of 0.593 cars per person. This was 9% higher than the southeast as a whole and some 24% higher than the national average of 0.478 cars per person. Taking into account car availability, which includes company cars, the figure rises to approximately 0.67 cars per person, 39% higher than the national average. Furthermore only 14% of households in Surrey did not own a car, compared with 18% in the southeast and 27% nationally.

During the decade (1993-2002), the southeast also experienced a larger increase in traffic (24%) than any other region in Great Britain. For some years Surrey followed this trend, but growth since 2001 has been much less. However, traffic flows in Surrey are still higher than in any other county in the southeast and congestion in Surrey appears to be getting worse. The time that vehicles spend stationary due to delays also amplifies the problem of air pollution at congested locations. There is therefore an additional health cost associated with congested junctions and town centres.

The problems in Elmbridge (and elsewhere in Surrey) are exacerbated by the following factors:

High level and density of population, development patterns and household characteristics, car availability.
Economic development and patterns of journeys to work.
Proximity to London and two major international airports.
Relatively low cost of car travel, compared with public transport fares.
Parking availability and cost.

These factors have resulted in an increase in demand for travel by private car, which in turn has resulted in a more congested network. The problem is worse during peak periods, when small incidents can give rise to serious delays. Peak spreading and rat running are also common phenomena.

4.4 Partnership working

Evidence of existing partnership working between the Council and Surrey County Council is shown through the Surrey Air Quality Group (SAQG), which facilitates liaison between SCC and the various Surrey local authorities. The following is drawn from the draft Surrey Transport Plan (in *italics*):

The county council will continue to work in partnership with the Boroughs and Districts to discharge these statutory duties:

Specifically, the county council will:

- *Attend meetings of the Surrey Air Quality Group;*
- *Seek to meet reasonable requests for traffic and other data;*
- *Incorporate appropriate physical measures in infrastructure schedules, agree options for enforcing existing regulations, agree options for supporting travel choices that are better for air quality and consider air quality issues in Borough and district-led planning processes and other areas of responsibility; and,*
- *Bring air quality-related proposals forward to the appropriate member committees (e.g. the relevant local committee).*

Surrey County Council also liaised with Transport for London (TfL) over their development of the London Low Emission Zone (LEZ).

5 Transport related options for the Air Quality Action Plan

5.1 Options appraisal

Recent government practice guidance provided detailed, but non-mandatory advice, on the economic principles and appraisal methods that could be applied for the assessment of local air quality measures and schemes. First, there is a scoping stage to draw up list of options with an assessment taking into account the costs and benefits of the measures. This is followed by a more detailed stage or business case that examines the most promising options in more detail.

However the above mentioned guidance also notes that it is only proportionate to undertake the significant more detailed phases for larger air quality proposals rather than any very small air quality proposals. It also indicates that for the majority of AQMAs most proposals are small scale.

The Action Plan also needs to consider the wider economic, social and environmental impacts, bearing in mind any other legal requirements and policy drivers. This meets with the general sustainable development principle. A wide range of potential options may be available to improve local air quality within the AQMAs and these all need to be considered at this stage of the action planning process.

The identification of potential measures was undertaken through a review of existing local and regional plans, consideration of measures referenced in LAQM.PG (09) and other relevant guidance documents. Whilst the Council may not have the necessary powers to implement all such options, they may work with, or encourage other organisations and agencies that have the capacity to take such options forward.

A summary of the groups of transport related measures is given in the following table along with brief descriptions and commentary notes. The purpose of this table is to provide a short analysis of the likely choices available to seek air quality improvements in the Elmbridge AQMAs. Note the non-transport related measures are discussed later.

Table 4 Possible transport related measures

	Type of measure	Description	Comments
A	Removal of pollution source from exposed population	The construction of new roads could divert traffic away from the roads in the AQMAs resulting in improved air quality.	The opportunity to build such roads in Elmbridge either does not exist or is highly limited in the extreme. The option also moves emissions to another location with no requirement to reduce them and so it is possible that overall emissions may be increased.
B	Removal of exposed population from pollution source	This requires the removal (physical or otherwise) of those houses, etc that are identified as relevant exposure.	The opportunity for this in Elmbridge does not exist or is highly limited in the extreme. As with Option A there is no requirement to reduce emissions.
C	Reduce emissions from sources using vehicle/ fuel technology	The majority of vehicles using roads in the AQMAs are powered conventionally and are of a range of ages. Technical options to convert vehicles into ones using cleaner engine and fuel technology exist. By requiring uptake of these technologies the emissions in the AQMAs would be reduced.	The opportunities are likely to be limited and experience elsewhere has shown that technology does not always work in a positive sense for all emissions, with the benefits for one pollutant traded against negative aspects for another.

D	Reduce emissions from sources by reducing the demand for travel or achieving better travel choices	This could be achieved either through reducing the need to travel, or by ensuring that travel is via a less polluting form of transport. To do this policy changes are required to influence choice.	This measure is on going both nationally and locally and an increased emphasis is feasible. The policies can also lead to the reduction in emissions of all pollutants (and greenhouse gases).
E	Optimisation of traffic movement through AQMAs	Changes in traffic management in the AQMAs may reduce emissions by either diverting some traffic onto better routes for them or by reducing congestion/ stationary traffic.	The opportunities for such actions are likely to be limited due to the nature of the AQMAs.

Outline discussion of options

Option A - from the above summary it can quickly be seen that the option to remove the source of emissions, i.e. traffic in the AQMAs, is not realistic in Elmbridge for a variety of reasons. Typically this type of measure is most relevant where there is a busy through route or major road in a town or village. In this situation the building of a by pass road outside of the build up area reduces the traffic in the town or village leading to an immediate improvement in air quality. Clearly this is not possible in Elmbridge due to its proximity to London, relatively small size and its build up character. Furthermore its green spaces are limited and precious with protected status.

Surrey County Council in its draft Surrey Transport Plan confirms that the building of new roads to solve such problems is no longer considered to be a panacea, for a number of reasons, including: environmental and sustainability issues (due to land-take, the impact on the natural environment, encouraging traffic growth, etc); the cost of such improvements (particularly in an era of constrained budgets); and that such solutions can mean the problems are displaced elsewhere on the network.

Option B – this is similar to option A with the requirement to reduce relevant public exposure to pollution, essentially through moving those people likely to be affected away from the source. (This is based on the concept of relevant exposure as described in the government's guidance for Local Air Quality Management). Theoretically this could be achieved by relocating those within any identified sites that exceed the objective. In reality this is not a feasible option due to cost, plus other societal and practical reasons. It would also not lead to improvements in air quality.

In view of these reasons Option A and B are not considered further in this plan

Option C – this considers the removal of pollution directly from vehicles using technology. To achieve this a local authority can consider the retrofitting of abatement equipment, as well as related measures such as increasing the uptake of low emission vehicles and the use of low emissions zones (known as LEZs). Retrofit schemes are based on locations where the most polluting of vehicles are encouraged to retrospectively install technologies to reduce emissions. The most significant example of measures to encourage retrofitting of abatement equipment is the nearby London LEZ. The aim is to reduce the emissions of the most polluting vehicles in a particular area by setting particular emission standards or criteria encouraging them to retrofit abatement equipment, with the aim of improving overall local air quality. Careful examination of the technologies is however required to ensure that the reduction of one emission does not lead to increased emissions of other pollutants. For example, some particulate control technologies using oxidation catalysts can lead to an increase in the proportion of NOx emitted directly as nitrogen dioxide (NO_2), which would be inappropriate in the Elmbridge AQMAs. One other important feature of a retrofit scheme is the need for systems to certify and identify any vehicles that have had abatement equipment retrofitted.

A Low Emission Zone (LEZ) is a geographically defined area where the most polluting of vehicles are restricted, deterred or discouraged. The aim is to improve air quality by reducing the number of more polluting vehicles in the area, based on particular emission standards (such as Euro vehicle emission standards). In many cases the intention is to bring the use of lower polluting vehicles forward in time.

The most significant scheme in the UK is again the London Low Emission Zone (LEZ) scheme, although other smaller examples exist in Europe.

Sections 1, 6 and 9 of the Road Traffic Regulations Act 1984 give local authorities extensive powers to make traffic regulation orders (TROs) which are used with Low Emission Zones. These powers can prohibit, restrict or regulate traffic or particular types of vehicle to a whole or part of any road(s) that the local authority is responsible for. In smaller schemes section 106 agreements as planning obligations for site usage can be used. (In the case of the Elmbridge AQMAs, Surrey County Council is the local authority responsible for the roads).

Examples to increase the uptake of low emission vehicles also includes the London LEZ, whereas other schemes include: Quality Bus Partnership Agreements in South Yorkshire requiring Euro III buses on designated routes; discounted car parking charges of up to 100% for vehicles with zero local emissions in Westminster and lesser discounts for Low Emission Vehicles in other locations; voluntary schemes with economic incentives such as Car Clubs that have successfully cut operators costs and emissions.

It is however important to note that as Elmbridge adjoins the London LEZ on its northern and eastern boundaries, it will have received some of the benefits of the LEZ already. This is because any vehicle travelling from the Borough into the LEZ will need to comply with the scheme (unless a substantial daily charge was paid in which case it will not benefit Elmbridge). The London LEZ scheme itself, since 2008, requires a standard of Euro III for particulate matter (PM) for lorries more than 3.5 tonnes and buses and coaches with more than eight seats plus the driver's seat over 5 tonnes. From 3 January 2012, a standard of Euro III for particulate matter for larger vans and minibuses, and a standard of Euro IV for particulate matter for lorries over 3.5 tonnes and buses and coaches over 5 tonnes will be required. The findings of the LEZ and overall impact on air quality are hard to discern but reports have indicated a reduction in pollutant emissions and extensive compliance by vehicle operators (Transport for London, 2010).

It is considered that it would be impractical to extend the London LEZ to include Elmbridge in view of the likely costs. Furthermore to develop specific LEZs within the Elmbridge AQMAs could result in confusion with that of the neighbouring scheme. Specific detailed local studies would be required to identify specific measures if a LEZ option were to be considered further.

Importantly, this however does not preclude the other measures to increase the uptake of low emission vehicles in Elmbridge.

Option C is therefore considered further in this plan

Option D – as already stated, this option is ongoing both nationally, through the introduction of improved Euro standards for road vehicles and also locally through the implementation of the Local Transport Plans and the development of the Local Development Framework. Thus this is an ongoing option. The Council can specifically provide leadership on some of these measures.

Option D is therefore considered further in this plan

Option E – this option seeks to reduce emissions of pollutants by aiming to remove vehicles from the AQMAs and/or by reducing congestion, which leads to stop start traffic conditions potentially exacerbating emissions of pollutants. As with the above option D such measures have been ongoing, however, this has not always been from the perspective of improving air quality. As a result it should be considered further.

Option E is therefore considered further in this plan

5.2 Detailed transport options for the Elmbridge AQMAs

The draft Surrey Transport Plan and the accompanying STP draft Air Quality Strategy were discussed in the previous chapter. It is also important to re-iterate that Elmbridge Borough Council has only limited powers for the roads within its AQMAs. Rather it is Surrey County Council that holds this responsibility as the highway authority. However it is the intention of both Councils to work together to improve air quality through this Action Plan and the Surrey Transport Plan (once finalised).

Surrey County Council will use specific transport measures and interventions as shown in the Air Quality Strategy toolbox (shown overleaf) to deliver key elements such as:

- Incorporating appropriate physical measures in infrastructure schedules;
- Identifying and agreeing options for the enforcement of existing regulations for parking, loading and utility works schedules;
- Identifying and agreeing options for supporting travel choices that are better for air quality.

All of these can be implemented as and when funding becomes available. Each measure or intervention should achieve one or more of the following outcomes:

- Restrain or reduce traffic volumes;
- Reduce traffic delays;
- Reduce tailpipe emissions of air pollutants per vehicle; or,
- Improve the provision of information to people on the air quality impacts of their travel choices.

5.2.1 Incorporating physical measures in infrastructure schedules

5.2.1.1

These measures include physical arrangements for on-street parking, loading and traffic routing. The source apportionment from the Further Assessment (reported earlier) indicated that heavy goods vehicles make a significant contribution of emissions of NOx within the AQMAs, but comprise a relatively small proportion of traffic. This may therefore represent an opportunity for a targeted and effective approach to improving air quality based on reducing emissions from heavy goods vehicles within the AQMAs.

Potential proposed measures include assessing the feasibility of diverting heavy goods vehicles along roads other than those in the AQMAs. There are likely to be many constraints precluding this, including physical and access issues, plus road safety. However the opportunity to investigate and prioritise such options needs to be taken.

5.2.1.2

These measures include developing traffic control systems and traffic signal strategies within the AQMAs. Traffic queuing can result in elevated concentrations of air pollution and create localised hot spots within the AQMAs. These may possibly be reduced by the phasing of traffic signals facilitating the smooth flow of traffic along given streets.

Traffic surveys of the AQMAs will assist in assessing for this measure. The use of traffic management systems with synchronised fixed time signals can then assist with addressing peak hour congestion and queuing at key junctions, along with ensuring that any queuing management system reduces emissions in the narrowest ‘ street canyon’ sections of the AQMAs. The successful implementation of such traffic management systems should help to reduce congestion, as well as emissions from road traffic sources in the AQMAs.

5.2.1.3

Raising awareness of the AQMAs is important, along with the promotion of options for people to contribute to improving local air quality can lead to long-term benefits for local air quality. Informing members of the public and local organisations about local air quality issues is very important to help

achieve success with improving air quality in the AQMAs and more generally. To raise the awareness of the AQMAs, the Council will consider erecting signs at various locations to alert drivers to the presence of the AQMAs and encouraging behavioural change e.g. reduce vehicle idling.

5.2.2 Enforcement of existing regulations

5.2.2.1

The decision to use a car for journeys is greatly influenced by the availability and cost of parking. The Council's Parking Management Strategy seeks to control and manage parking and it therefore has an important role in reducing reliance on the car. Measures addressing parking also contribute to reducing congestion and other traffic management. The Council also seeks to support policies to encourage travel by sustainable modes, whilst also supporting development and economic growth. The Controlled Parking Zones (CPZs) and Parking Places in Elmbridge are administered on behalf of Surrey County Council and Elmbridge uses contractors for enforcement purposes. The monitoring of length of stay restrictions and parking controls as well as continued enforcement in the AQMAs can help reduce emissions.

5.2.3 Supporting beneficial travel choices that are better for air quality

5.2.3.1

The purpose of travel plans is to seek to address the negative impacts of car travel, notably single occupancy vehicles, by encouraging car sharing, or a shift to more sustainable forms of transport, such as walking, cycling and public transport; or alternatively reducing the need for travel. Such plans typically recognise that one solution is unlikely to be suitable for everyone and thus focus on encouraging the consideration of alternative forms of travel through the provision of incentives such as improved cycle facilities, flexible working arrangements and discounted public transport. As a result travel plans have been widely adopted across the UK and are widely promoted.

The Council have been proactive in the development of Travel Plans, most notably through the development of its Travel Plan in 2006. The Council has also worked with other businesses and Surrey County Council. As part of this commitment the ability to work from home has been made available to some Council staff and this has reduced vehicle journeys to the office.

Mercedes-Benz World and Surrey County Council have set up the Brooklands Travel Plan Network in the Brooklands business community in Weybridge as a collaboration to help businesses on the site share ideas about travel planning and to work together to reduce congestion in the local area. So far the network has been successful in commissioning a joint business travel survey, which has produced data about employee travel patterns to the site. The network also intends to release it's own community website later this year to provide employees and visitors with up to date travel information. Further information on travel plans in Elmbridge is available on the Surrey County Council website at http://www.surreycc.gov.uk/sccwebsite/sccwspages.nsf/LookupWebPagesByTITLE_RTF/Travel%20planning%20in%20Elmbridge?opendocument

Increasing the number of travel plans close to the AQMAs is considered important to reduce emissions, as well as continuing the implementation of the Council's travel plan and working with local businesses/ organisations to encourage the development and implementation of travel plans.

5.2.3.2

School Travel Plans represent a commitment from schools to develop a package of measures aimed at encouraging healthier, safer and more environmentally friendly methods of travelling to and from school by parents, pupils and staff. Surrey County Council has lead responsibility for helping schools to implement school travel plans. Financial support was given to schools to encourage take up, although this ended in March 2010.

Continuing to support the implementation of the School travel plans is considered important to reduce emissions.

5.2.3.3

Surrey County Council has recognised that the development of Freight Quality Partnerships can help target and reduce localised emissions from freight operations. These can also offer the potential to achieve a balance between improving the local economy and protecting the environment across Elmbridge and Surrey. The undertaking of a feasibility study of the AQMAs would help assess the potential and constraints for the development of local freight quality partnership aimed at reducing emissions.

5.2.3.4

Buses and coaches provide an essential component of public transport in Elmbridge and its AQMAs; they also represent an important alternative to cars. However, as shown in the source apportionment earlier, buses can also make a significant contribution to emissions of NOx. Consequently it is important to assess what can be done to minimise emissions from fleet vehicles. An investigation of the potential for establishing a bus partnership with local operators could provide an opportunity to try and reduce emissions from buses operating within the AQMAs. Numerous authorities in the UK have already developed voluntary agreements with bus operators and the Council should work with Surrey County Council to encourage bus companies to improve emission performance of their vehicle fleet.

5.2.4 Borough led planning processes and responsibilities

5.2.4.1

Measures relating to the LDF were discussed in the previous chapter. The Council is identifying a method to obtain contributions from new developments within or in the vicinity of the AQMAs. These contributions will be used to finance new infrastructure to improve air quality. This could include measures such as cycle lanes, improved public transport, public awareness campaigns etc that would be undertaken in collaboration with Surrey County Council. The Council has recently revamped the street scene in Walton High Street, which has meant there are now a limited number of parking spaces along its length. This has improved the flow of traffic as the parked cars were causing congestion, thereby contributing to the poor air quality in this AQMA.

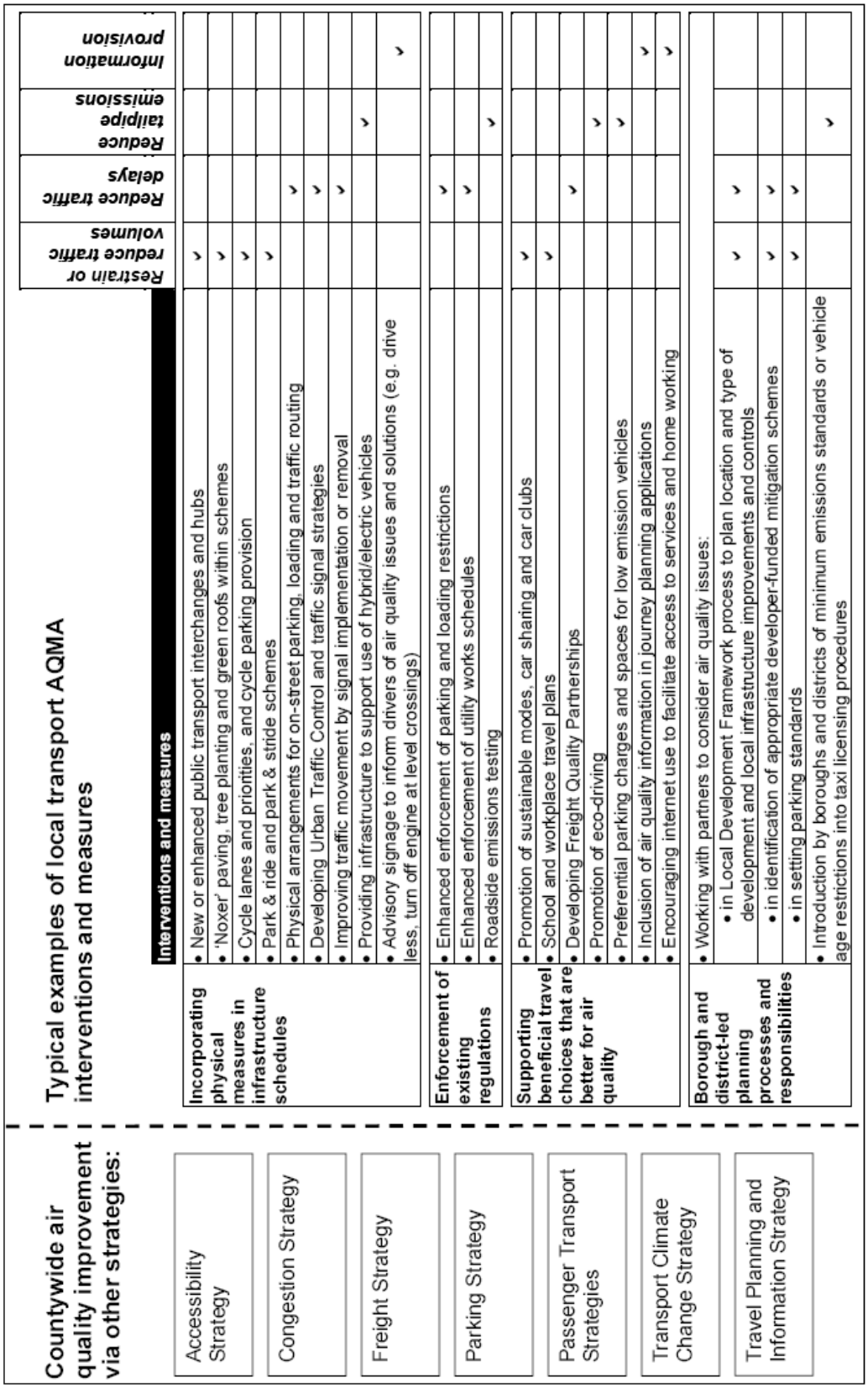
5.2.4.2

The Council also has important responsibilities in leading by example and targeting reductions in emissions from its transport fleet activities as much as practicable. The Council has implemented numerous policies and programmes aimed at improving the energy efficiency of the Council fleet, as well as undertaking an evaluation process, taking into consideration fuel consumption figures and CO_2 emissions when procuring new vehicles for the Council fleet. There are a number of alternative fuels and technologies available that offer the potential to lower emissions of air pollutants and CO_2 from road transport sources. Over the past 2 years, the Council has replaced the vans used by the Leisure Division and also the Pest Control service with more efficient and cleaner vehicles. Two electric staff pool cars have been purchased with charging points provided in the staff car park.

5.2.4.3

Promoting cycling and walking represents a key objective to improve air quality in Elmbridge and Surrey. Both Councils aim to encourage members of the public to consider walking or cycling instead of using their car, and as a consequence, promote healthy lifestyle choices and environmental improvement by reducing the number of cars on the road. The Council has recently joined the 'Cycle to Work' scheme to enable staff to buy subsidised bikes and has already provided cycle lock up points and new showering facilities at its main offices.

Surrey County Council Air Quality Strategy Toolbox



6. Identification of Non Transport Related Measures

6.1 Proposed actions

The following sections apply to all the Council's AQMAs as well as the rest of the Borough.

6.2 Raising Public Awareness through the Council Website

The Council undertakes air quality monitoring within the Elmbridge AQMAs and in other parts of the Borough. The high quality continuous monitoring undertaken is linked to the London Air Quality Network (LAQN), which provides air quality information to the public and others. This information is available from its website (see http://www.londonair.org.uk/london/asp/default.asp). The site contains general air quality information, together with up-to-date monitoring data and links to other websites.

Downloadable copies of key Council air quality documents are also available from the Council's website (see http://www.elmbridge.gov.uk/envhealth/pollution/airquality.htm). The content of the site is reviewed regularly and updated as new information becomes available.

6.3 Industrial Emissions

Although road transport accounts for the greater part of pollution related emissions of nitrogen oxides in Elmbridge, other sources including those from industrial emissions are contributory factors to air quality and therefore should be considered.

The Environmental Permitting Regulations 2010 builds on the previous IPPC system under the Environmental Protection Act 1990. Local authorities are the regulators for Part A2 as well as Part B installations and the Environment Agency for Part A1 installations. Both systems regulate air pollution from industrial sources, the former controlling small/medium size operators and the latter dealing with larger operators. Under the regime site operators are required to obtain an Environmental Permit from the relevant regulator. The permit sets out conditions relating to operation that the operator is required to meet, along with the requirement to apply 'Best Available Techniques' (BAT). Local authorities are required to maintain a Public Register of all Part A and B installations. The Borough currently has 50 Part B installations, including petrol stations and dry cleaners. There are no Part A1 installations within the Borough.

Other industrial premises are controlled by nuisance powers under the Environmental Protection Act 1990 and the prohibition of dark smoke from industrial or trade premises under the Clean Air Act 1993. The latter legislation makes it an offence to burn any material that is likely to produce dark smoke. Under this Act the Council can take action even after a fire has extinguished if there is evidence of material on the fire, such as plastics and rubber, which may have given rise to dark smoke. This is particularly useful where unscrupulous individuals / businesses burn waste at night, hoping to avoid detection.

6.4 Energy Efficiency

The Council has a 'climate change group', which is working to lower the emissions produced by its own buildings and vehicles in order to reduce its carbon output. One outcome is the replacement of the heating system at the Council offices and installing solar panels to reduce overall fuel use.

In 2009 the Council also supported the adoption of the Surrey wide Climate Change Strategy commissioned by the Surrey Climate Change Partnership (SCCP) as part of a climate change project and funded by the Surrey Improvement Partnership (SIP). The purpose of which is to:

Facilitate and develop joint working on climate change issues
Develop best practice, which can be shared throughout the county and region
Create a Surrey wide approach that can lead to improvement and efficiency.

7. Impact assessment and options appraisal

7.1 Introduction

The Elmbridge Air Quality Action Plan (AQAP) recognises that many bodies outside the Council, as well as different service areas within the Council are needed for successful implementation. The actions included for Elmbridge Borough Council are mostly outlined within the Council's Corporate priorities, which as outlined, are assessed each year.

7.2 Impact assessment

The Council's AQAP has also considered that there are wider impacts to the measures proposed, since it is clear that many of the actions have other non-air quality impacts. These considerations were considered when the action plan was formulated although a further examination of these will be required if more detailed information becomes available. Additional benefits and shortfalls of air quality improvement measures were assessed in terms of:

1. Other (non-NO_x) air pollutants – those measures aimed at reducing emissions of NO_x from combustion sources through direct and indirect measures will in many instances lead to reductions in greenhouse gases and other toxic pollutants.

2. Congestion – measures to reduce car use and increase use of other sustainable modes e.g. cycles and walking will remove vehicles from the road in the short term and thereby relieve congestion. If, however, congestion is relieved there is a potential for increasing traffic speeds with potential impacts being increased noise and emissions.

3. Attractiveness of public transport – this is an important consideration since any increase in public transport must be accompanied by improved attractiveness of stock and infrastructure, including public safety issues.

4. Economic vitality of local businesses – this is a consideration of many of the planning and transport planning related actions.

5. Social impacts – including accessibility to buses and other transport, as well as for example potential changes to car parking.

6. Other – many of the actions proposed relate directly to Council only based actions. This provides an important signal to others in the Borough that the Council is leading on initiatives to improve air quality, including educating and promoting good practice.

Implementation

In line with the different bodies that have helped develop this AQAP, the key partners have been identified. These are indicated in the Action Plan and outlined in the following table.

Table 5 Responsibility for AQAP actions

EBC	Elmbridge Borough Council
SCC	Surrey County Council

8. Cost Effectiveness

8.1 Introduction

The purpose of assessing cost effectiveness is to enable actions to be prioritised in order to determine which short listed actions are to be implemented and in what order.

The Elmbridge AQAP, in line with the government's guidance, does not provide a full cost benefit analysis. To do so would entail a highly detailed study of the air pollution reduction costs e.g. the cost of improving air quality by 1 µg m^{-3} in the AQMAs (and the rest of the Borough potentially), as well as the health benefit and other costs associated with any air quality improvements. Such an analysis would require significant effort.

The guidance therefore permits a more simplified assessment that relies on judgment and practice, although it is important to note that some measures in this AQAP are still in development and therefore further definition may be required.

8.2 Cost effectiveness categories

The value of assessing the cost effectiveness of the actions is limited for a number of reasons. These include that the Council and its partners were carrying out many of the actions described in this plan prior to formulation. Furthermore, other actions included in the Action Plan include statutory duties of the Council and its partners and therefore must be carried out regardless.

There is also no accepted means for assessing the cost effectiveness of actions. A precise quantitative assessment is very difficult to achieve given the difficulty in obtaining accurate costs and accurate measures of air quality impacts. For these reasons, a quantitative method of prioritisation has been adopted based on professional judgement.

First, a separate rating of the potential changes in air quality is required. To derive this descriptive ratings are used based on judgement. These ratings indicate the change that might arise from a given action and relate to potential improvement. The rating relates to the source apportionment study (where possible), the likely traffic or other impact or change within the AQMA and Borough and a judgement on the overall magnitude.

Table 6 Air Quality impact rating descriptions

Air Quality Rating	Definition
Low (1)	Impact is small and localised. Will be beneficial as part of a wider measure.
Medium (2)	Impact improves air quality and benefits from the action(s) are considered important and clearly seen.
High (3)	The impact on air quality improvement is considered significant and the actions(s) are seen as core.

Alongside the air quality rating, we need to derive an understanding of potential monetary costs To derive this indicative monetary costs of the individual actions are estimated; these relate to the costs of the action and consequently the costs are not necessarily for the Council only; as they might be shared or are the responsibility of another party. The costs also do not include the costs that may be incurred by third parties that might be affected by the actions. However, where these could be important a separate comment is included.

Table 7 Cost rating descriptions

Cost rating	£ cost banding	Description
Low (3)	< 50k	Includes cost is covered by normal existing budget
Medium (2)	50k - 200k	Additional funding is required, but this may be incorporated within forward planning.
High (1)	> 200k	Additional funding is required that cannot be incorporated into existing budget

These air quality and cost ratings are used to determine the cost/impact shown in the AQAP table (see Table 9). It is considered that existing Council budgets are able to meet the costs of most of the actions defined within the low cost rating definition. Those actions categorised as medium or high may require additional funding.

The actions described in this AQAP will have a greater chance of success where there is public support and where they strike a balance between environmental and other objectives such as improvements in human health, noise, safety etc. The achievement of air quality objectives must therefore not be considered in isolation, although the definition of 'cost' in this AQAP is not intended to encompass such additional impacts.

A matrix has been used to assign an overall cost effectiveness value. This value between 1 and 9 is based on how much of an improvement in ambient air quality the action will achieve and what is the likely cost using the judgements based on cost and air quality impact. The most cost effective actions i.e. those where there is a low cost to the Council and its partners, but a high air quality impact are given a value of 9. Conversely those actions that are high cost but with low air quality impact are given a value of 1.

Table 8 Cost Effectiveness Matrix

Cost x impact = effectiveness	**High Impact** (3)	**Medium Impact** (2)	**Low Impact** (1)
High cost (1)	3	2	1
Medium cost (2)	6	4	2
Low cost (3)	9	6	3

(Important note – the values used to derive overall cost effectiveness above are not those used in previous tables)

In many instances actions are ongoing. In addition the time scales for when the action are expected to take place are indicated as short, medium or long term. In these instances short term relates to action starting within a period of twelve months; medium term relates to the period within the next two to three years and long term to three years and beyond.

8.3 Monitoring progress on the Elmbridge AQAP

The actions set out in Table 9 of this Plan will be reviewed and assessed twelve months after the Council has adopted the AQAP. At this stage actions, relating to an individual Elmbridge AQMA only, have not been specified (see next section for prioritisation of AQMAs).

Table 9 Air Quality Action Plan Proposals

	Action	Who	When	Cost	AQ Impact	Effectiveness	Wider Impacts
Detailed strategic measures							
1	Seek the integration of the Elmbridge AQAP with the LDF and ensure that all development proposals with the potential to exert an impact on the Elmbridge AQMAs continue to be assessed for air quality impacts and where necessary, appropriate mitigation measures are provided.	EBC	(Short/ Medium-term)	Low	High	9	This is an on going action that can promote sustainable development.
2	Continue and enhance joint working within Elmbridge Borough Council to encourage the integration of air quality within existing and future Council strategies.	EBC	(Short/ Medium-term)	Low	High	9	This is an on going action.
3	Integrate future versions of the Surrey Transport Plan with the specific Elmbridge AQMAs and so seek the improvement of air quality.	SCC/ EBC	(Short/ Medium - term)	Low	High	9	This is an on going action.
Detailed transport options							
4	Surrey County Council will review the prohibition of certain types of vehicles from using Elmbridge AQMAs, either 24 hours a day or during normal working hours and implement applicable findings.	SCC	(Short/ Medium - term)	Medium	High	6	Reduce congestion, noise
5	Surrey County Council will review traffic control systems in the Elmbridge AQMAs; including signalised junctions to (a) reduce standing/slow moving traffic (b) support increased bus travel by assisting the introduction of bus priority where practicable.	SCC	(Short - term)	Medium	High	6	Reduces congestion
6	Elmbridge Borough Council and Surrey County Council will seek to collaborate in a joint scheme promoting public awareness of the Elmbridge AQMAs using signage and information where appropriate.	EBC/ SCC	(Short - term)	Medium	High	6	Sets example of good practice
7	Elmbridge Borough Council will review car park opening times and short/medium stay parking tariffs in the Elmbridge AQMAs with the aim of reducing traffic during peak periods.	EBC	(Short/ Medium - term)	Low	High	3	Reduces congestion
8	Elmbridge Borough Council will consider discouraging long stay parking within relevant Elmbridge AQMAs where this may result in air quality improvements.	EBC	(Short/ Medium - term)	Low	Medium	2	Increased parking charges

	Action	Who	When	Cost	AQ Impact	Effectiveness	Wider Impacts
9	Surrey County Council/ Elmbridge Borough Council will collaborate via planning agreements and other liaison with businesses to promote green travel plans. Elmbridge Borough Council will normally require major new developments to adopt a Travel Plan as a condition of planning permission.	SCC/ EBC	(Short - term)	Low	2	6	Reduces congestion
10	Consider the promotion/organisation of car sharing clubs.	SCC/ EBC	(Medium -term)	Low	1	3	Other parties can instigate.
11	Surrey County Council will seek to introduce traffic demand restraint measures where possible to reduce traffic volumes in the Elmbridge AQMAs.	SCC	(Long - term)	Medium	2	4	Reduce congestion, noise
12	Surrey County Council will seek to implement freight and bus quality partnerships.	SCC	(Medium -term)	Medium	2	4	Reduces congestion
13	Surrey County Council will seek to stimulate bus travel by the introduction of real time information systems at bus station/railway station/bus stops.	SCC	(Medium -term)	Medium	2	4	Improves uptake of public transport
14	Surrey County Council will seek to stimulate bus travel by the introduction of through ticketing and better access to key facilities (e.g. railway station).	SCC	(Medium -term)	Low	1	3	Improves uptake of public transport
15	If it can be proven that proposals for development are likely to significantly increase traffic flows, and thereby significantly increase NO_2 within Elmbridge AQMAs, then Elmbridge Borough Council, as Planning Authority, will refuse planning permission.	EBC	(Short - term)	Low	3	9	This is an on going action
16	Conditions will be imposed on any new residential development within an AQMA to mitigate the impact of poor air quality.	EBC	(Short - term)	Low	3	9	May be additional costs for development
17	Surrey County Council is the statutory highway/transport consultee to Elmbridge Borough Council (as Planning Authority). SCC will be asked to advise on how best to ensure that new development can reduce traffic emissions.	SCC/ EBC	(Short – term)	Low	2	6	This is an on going action.
18	Surrey County Council will undertake additional vehicle counts where necessary to increase and maintain information on traffic volumes, which will help Elmbridge Borough Council in respect of further modelling and monitoring of air quality.	SCC	(Short – term)	Low	2	6	This is an on going action

	Action	Who	When	Cost	AQ Impact	Effectiveness	Wider Impacts
19	Elmbridge Borough Council and Surrey County Council will set good examples by undertaking environmental audits of their respective functions to identify scope for improvement, notably with respect to green travel arrangements and energy efficiency.	EBC/ SCC	(Medium -term)	Low	1	3	Encourages wider good practice
20	Elmbridge Borough Council will review licensing conditions of taxis aimed at improved vehicular emissions to comply with Euro IV.	EBC	(Medium -term)	Low	1	3	Reduces other pollutants.
Non Transport Related Measures							
21	Elmbridge Borough Council will seek to maintain and where appropriate increase its air quality monitoring in and around Elmbridge AQMAs.	EBC	(Short - term)	Medium	3	6	May lead to additional or less AQMAs.
22	Continued enforcement of industrial emissions by Elmbridge Borough Council to ensure compliance with the Environmental Permitting Regulations 2010 for Part A2 and B installations.	EBC	(Short - term)	Low	1	3	Reduces other air pollutants. Ongoing action
23	Continued enforcement by Elmbridge Borough Council of emissions to ensure compliance with Clean Air Act 1993.	EBC	(Short - term)	Low	1	3	Reduces other air pollutants. Ongoing action
24	Continued enforcement by Elmbridge Borough Council of statutory nuisances that gives rise to emissions in contravention of Part 3 of the Environmental Protection Act 1990.	EBC	(Short - term)	Low	1	3	Reduces other air pollutants. Ongoing action
25	Elmbridge Borough Council will adopt the Best Practice Guidance on “The control of dust and emissions from construction and demolition” (produced by London Councils) to seek to ensure that building contractors minimise emissions.	EBC	(Short - term)	Low	2	6	Reduces dust and other emissions
26	Elmbridge Borough Council to work to secure improvement in domestic energy efficiency through promotion and engagement.	EBC	(Short - term)	Low	1	3	Reduce CO_2 emissions and fuel poverty
27	Elmbridge Borough Council, as Building Control Authority, will provide guidance to developers on how best to meet technical standards, which relate to conservation of fuel and power as set out in the Building Regulations 2000 (as amended).	EBC	(Short - term)	Low	1	3	Reduce CO_2 emissions. Ongoing action

	Action	Who	When	Cost	AQ Impact	Effectiveness	Wider Impacts
28	Elmbridge Borough Council and Surrey County Council will collaborate in exploring ways of maintain existing tree populations and providing additional tree stock. These trees can absorb gases and particles.	SCC/ EBC	(Short - term)	Low	1	3	Improve visual amenity of AQMAs

8.4 Prioritisation of Air Quality Actions

The air quality actions as outlined have been prioritised for implementation according to various measures, including the basis of existing actions and budgets, overall costs and of course cost effectiveness as determined in Table 9.

The priorities attached to the proposed actions however are also widened by the different AQMAs within Elmbridge. Clearly some of these require greater action and involvement than others. It is therefore expected that the greatest priority for action will be driven by air quality considerations. Namely the air quality within the individual AQMA, allied with the extent of "relevant exposure" (as outlined within government's LAQM guidance).

It is proposed that the quality of air within the Elmbridge AQMAs is determined according to level above the government's objective as determined by the monitoring undertaken by the Council; this will be supplemented by the modelled base case predictions for the AQMAs. The extent of relevant exposure is also determined from the modelled base case predictions in the Council's Further Assessment.

Based on this ranking the AQMAs with highest prioritisation for specific AQMA measures are as follows (from highest to lowest priority):

AQMA6	Weybridge
AQMA3	Walton on Thames
AQMA5	Cobham
AQMA1	Esher town centre
AQMA7	Hinchley Wood
AQMA2	Walton Road, Molesey
AQMA4	Hampton Court Way, Molesey

9. Consultation and stakeholder engagement

9.1 Introduction

The Elmbridge Air Quality Action Plan is intended to be an evolving plan that will further develop in time. It will be the subject of ongoing consultation by stakeholders and others.

9.2 Stakeholder involvement

Initial formulation has been undertaken with the officers dealing with air quality at Elmbridge Borough Council. Further consultation will be undertaken with representatives of Surrey County Council, Ward Members and others for feedback.

In addition many of the actions in the AQAP have already been the subject of separate intensive consultation, e.g. those relating to the Council's planning, transport and environmental policy and processes. This stakeholder engagement will continue throughout the life of the AQAP.

9.3 Council decision making

The Council's Vision for Elmbridge has already been outlined and this underlines the Council's commitment to sustainable development in the Borough. This AQAP will be the subject of Council approval. Regular annual progress reports will be issued through the Council's standard reporting mechanisms outlining and updating AQAP progress.

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Glossary

APEG:	Air Pollution Expert Group
AQAP:	Air Quality Action Plan
AQMA:	Air Quality Management Area
AQS:	Air Quality Strategy
BAT:	Best Available Techniques
Defra:	Department for the Environment, Food and Rural Affairs
DfT:	Department for Transport
DPD:	Development Plan Documents
GVW:	Gross vehicle weight
IPPC:	Integrated Pollution Prevention and Control
HA:	Highways Agency
HGVs:	Heavy Goods Vehicles (>3.5 tonne GVW)
LAQN:	London Air Quality Network
LAQM:	Local Air Quality Management
LDD:	Local Development Document
LDF:	Local Development Framework
LDS:	Local Development Scheme
LEZ:	Low Emission Zone
LGVs:	Light Goods Vehicles (<3.5 tonne GVW)
LTP:	Local Transport Plan
$\mu g\ m^{-3}$:	Microgrammes per cubic metre (a measure of mass concentration of pollutant)
NO:	Nitric oxide
NO_2:	Nitrogen dioxide
NOx:	Nitrogen oxides (includes both NO_2 and NO)
PG09:	LAQM Policy guidance (2009)
PM_{10}:	Particulate Matter (with a diameter of less than 10µm)
PPC:	Pollution Prevention Control
QA:	Quality Assurance
QC:	Quality Control
SCC:	Surrey County Council
SCI:	Statement of Community Involvement
TG09:	LAQM Technical guidance (2009)
TRO:	Traffic Regulation Order

Appendix 1

Table 10 Air quality objectives (from Air Quality Regulations 2000 and Amendment Regulations 2002)

Pollutant	Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 μg m^{-3}	Running Annual Mean	31 Dec 2003
	5 μg m^{-3}	Annual Mean	31 Dec 2010
1, 3 Butadiene	2.25 μg m^{-3}	Running Annual Mean	31 Dec 2003
Carbon Monoxide	10 mg m^{-3}	Daily Maximum Running 8 hour mean	31 Dec 2003
Lead	0.5 μg m^{-3}	Annual Mean	31 Dec 2003
	0.25 μg m^{-3}	Annual Mean	31 Dec 2008
Nitrogen Dioxide	200 μg m^{-3} not to be exceeded more than 18 times a year	1 hour mean	31 Dec 2005
	40 μg m^{-3}	Annual Mean	31 Dec 2005
Particles (PM_{10})	50 μg m^{-3} not to be exceeded more than 35 times a year	24 hour mean	31 Dec 2004
	40 μg m^{-3}	Annual Mean	31 Dec 2004
Sulphur Dioxide	350 μg m^{-3} not to be exceeded more than 24 times a year	1 hour mean	31 Dec 2004
	125 μg m^{-3} not to be exceeded more than3 times a year	24 hour mean	31 Dec 2004
	266 μg m^{-3} not to be exceeded more than 35 times a year	15 minute mean	31 Dec 2005

Carbon monoxide (CO) is a colourless and odourless gas produced by the burning of fuels. Exposure to CO leads to a decreased uptake of oxygen by the lungs and can lead to a range of symptoms as the concentration increases. Early symptoms of exposure include tiredness, drowsiness, headache, pains in the chest and sometimes stomach upsets. Some people, for example those with heart disease, are at an increased risk. Exposure to very high concentrations will lead to death. However such conditions, where there are very high concentrations, are most likely to arise in confined spaces, rather than outdoors where the public are exposed and the air quality strategy (AQS) applies.

Benzene at normal ambient temperatures occurs as a liquid, but it readily evaporates and small amounts are detectable in the air. It is known from workplace studies that benzene is potentially carcinogenic, that is, exposure to it may lead to the development of cancer. The Government's Expert Panel on Air Quality Standards (EPAQS) considered that the risks associated with the levels found in the air in the UK to be small and not be measurable with any accuracy (EPAQS, 1994). Nevertheless, it considered that efforts continue to be made to reduce the levels even further as a precautionary measure.

1,3 Butadiene arises from the combustion of petroleum products and its manufacture and use in the chemical industry. It is not present in petrol but is formed as a by-product of combustion. It is also produced by tobacco smoking, which is an important indoor source. EPAQS examined that the adverse effects of 1,3-butadiene on human health and concluded that it was a genotoxic human carcinogen (that is, it is able to cause cancer by damaging genetic material in cells).

Lead in particulate form in air can be inhaled directly by people, and ingested indirectly following its deposition on soil and crops. Exposure to lead has been known to be harmful to people for many years, with severe adverse effects on the blood, the nervous system and the kidneys (although these effects only occur with high exposures). More subtle effects caused by lower exposure to lead can also arise, such as may occur from the presence of lead in drinking water, paint and dust, and in the ambient air. These effects include the impaired intellectual development of children. EPAQS concluded that the available evidence suggests that the risks associated with the levels found in the air in the UK are very small and cannot be measured with any accuracy (EPAQS, 1998). However, efforts to reduce the levels even further continue as a precautionary measure.

Nitrogen dioxide (NO_2) and nitric oxide (NO) are both oxides of nitrogen, and are collectively referred to as nitrogen oxides (NO_x). All combustion processes produce NO_x emissions, largely in the form of nitric oxide, which is then converted to nitrogen dioxide, mainly as a result of reaction with ozone in the atmosphere. It is nitrogen dioxide that is associated with adverse effects upon human health. At high concentrations NO_2 causes inflammation of the lung. Long-term exposure is also considered to affect lung function and exposure to NO_2 is particularly important for people with asthma and related diseases. NO_x is also important in the formation of ozone and secondary particle formation.

Sulphur dioxide (SO_2) is a colourless gas, produced from burning fossil fuels like coal and oil. Power stations and oil refineries are the main sources in the UK, with small releases from other industries. SO_2 is also found naturally in the air at low concentrations from natural releases such as volcanoes and forest fires. SO_2 also has role in the formation of secondary particles. SO_2 can cause breathing difficulties at high concentrations over short periods of time, particularly to those with asthma and chronic lung disease. As a result the AQS objectives are all incident based.

PM_{10} (particles measuring 10µm or less aerodynamic diameter) represent those particles likely to be inhaled by humans, accepting that the chemical and physical composition varies widely. In view of this there is a wide range of emission sources that contribute to PM_{10} concentrations in the UK. Research studies have confirmed that these sources can be divided into 3 main categories (APEG): (i) Primary particle emissions derived directly from combustion sources, including road traffic, power generation, industrial processes etc. (ii) Secondary particles formed by chemical reactions in the atmosphere, comprising principally of sulphates and nitrates. (iii) Coarse particles comprising emissions from a wide range of sources, including re-suspended dusts from road traffic, construction works, mineral extraction processes, wind-blown dusts and soils, sea salt and biological particles. Particles are associated with a range of health effects, including effects on respiratory and cardiovascular systems, asthma and mortality. As a result, EPAQS recommended a daily standard based on the evidence reviewed with an annual mean standard to assist with policy formation.

Appendix 2

Table 11 Bias adjusted diffusion tube monitoring in Elmbridge AQMAs (2005 to 2008) (µg m^{-3})

(Notes – bold indicates exceeds AQS objective; italics < 75%)

Code	2005	2006	2007	2008
WALTON3	**44.9**	**40.4**	38.1	39.0
WALTON8				**42.0**
WALTON9				**43.4**
WALTON10				**49.4**
WALTON11				**46.1**
WALTON12*				*35.5*
WALTON13*				*33.9*
WALTON14*				*38.9*

Code	2005	2006	2007	2008
MOLESEY1		43.5	41.9	41.9
MOLESEY3	33.7	29.9	23.6	25.1
MOLESEY4	**50.2**	38.7	35.4	38.0
MOLESEY5	37.4	**42.2**	37.1	37.8
MOLESEY6	**40.5**	**44.0**	33.0	34.1
MOLESEY17				35.6
MOLESEY18*				**47.1**
MOLESEY19*				**50.7**
MOLESEY20*				**50.3**
THAMES DITTON1	**55.2**	**44.0**	**49.4**	**47.0**

Code	2005	2006	2007	2008
MOLESEY7	34.9	31.7	25.0	27.5
MOLESEY8	**55.8**	**51.5**	**41.4**	**47.4**
MOLESEY9	**49.4**	**57.1**	**42.4**	**44.3**
MOLESEY10	**41.5**	**57.7**	38.7	37.7
MOLESEY11	**46.4**	**41.4**	36.1	37.0
MOLESEY12	**47.1**	**43.8**	35.1	38.1
MOLESEY13	**46.4**	35.1	32.4	37.1
MOLESEY14	36.3	32.1	33.0	27.9
MOLESEY15	**44.2**	**40.9**	36.9	36.1
MOLESEY16	**43.3**	38.1	33.8	33.7

Code	2005	2006	2007	2008
COBHAM1	**47.0**	**50.1**	**41.2**	39.5
COBHAM6				29.8
COBHAM7				39.4

Code	2005	2006	2007	2008
ESHER1	**53.2**	**61.3**	**52.8**	**52.9**
ESHER2	**40.9**	33.3	34.6	32.7
ESHER3	28.9	27.4	25.0	24.0
ESHER4	**53.0**	**58.8**	**45.7**	**52.8**
ESHER5	**49.2**	**56.1**	**41.1**	**51.7**
ESHER6	**41.7**	**41.9**	33.1	36.9
ESHER7	**58.8**	**65.3**	**58.2**	**60.3**
ESHER8	**62.1**	**63.9**	**51.9**	**54.2**

ESHER9	**43.8**	**42.4**	35.7	35.0
ESHER10	38.2	38.7	31.9	38.4
ESHER11	**42.2**	**44.4**	37.1	**40.4**
ESHER12	37.2	39.5	35.6	33.0
ESHER13	**50.3**	**52.6**	**43.4**	**50.3**
ESHER14	**54.5**	**52.6**	**43.7**	**45.9**
ESHER15	**47.8**	**48.7**	**45.0**	**42.0**
ESHER16	**58.7**	**53.7**	**44.2**	**45.2**

Code	2005	2006	2007	2008
HINCHLEY WOOD 1	**49.7**	**56.8**	**50.1**	**52.4**
HINCHLEY WOOD 2				*57.7*

Code	2005	2006	2007	2008
WEYBRIDGE1	**53.7**	**53.1**	**48.7**	**43.6**
WEYBRIDGE4	**45.6**	**49.0**	43.1	**46.4**
WEYBRIDGE5	**49.2**	**61.5**	**46.0**	**50.6**
WEYBRIDGE6	**40.5**	**48.3**	35.8	38.5
WEYBRIDGE7	**61.4**	**63.3**	**57.5**	**62.0**
WEYBRIDGE8	**51.9**	**56.2**	39.9	**47.7**
WEYBRIDGE9	36.5	37.3	27.8	32.6

Table 12 Details of diffusion tube monitoring sites in the Elmbridge AQMAs (from 2009 USA)

Site Name	Site Type	OS Grid Ref	AQMA	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road	Worst-case Location?
Cobham 1	Roadside	TQ 510828, 159996	Y	Y (2.7m)	0.6m	Y
Cobham 3	Roadside	TQ 509539, 160695	N	N	3.4m	Y
Cobham 4	Roadside	TQ 509487, 160661	N	Y (3m)	3.1m	Y
Cobham 5	Roadside	TQ 510797, 160179	N	Y (5.9m)	2.2m	Y
Cobham 6	Roadside	TQ 510814, 160099	N	Y (4m)	6m	Y
Cobham 7	Roadside	TQ 510861, 159906	Y	Y (4.2m)	3.1m	Y
Cobham 8	Roadside	TQ 510926, 159837	N	Y (4m)	4m	Y
Esher 1	Roadside	TQ 513840, 164693	Y	Y (0.4m)	1.5m	Y
Esher 2	Roadside	TQ 514086, 164788	Y	N	1m	Y
Esher 3	Urban Background	TQ 514188, 164707	N	N	N/A	N
Esher 4	Roadside	TQ 514058, 164855	Y	N	4.7m	Y
Esher 5	Roadside	TQ 514150, 162470	N	N	1.4m	Y
Esher 6	Roadside	TQ 514003, 164811	Y	Y (4.4m)	0.7m	Y
Esher 7	Roadside	TQ 513982, 164750	Y	Y (2.3m)	0.6m	Y
Esher 8	Roadside	TQ 513832, 164684	Y	Y (0.1m)	3.2m	Y
Esher 9	Roadside	TQ 513821, 164712	Y	N	0.6m	Y
Esher 10	Roadside	TQ 513886, 164767	Y	Y (4.3m)	2m	Y
Esher 11	Roadside	TQ 513893, 164607	Y	Y (0.1m)	5.1m	Y
Esher 12	Roadside	TQ 513814, 164598	Y	Y (0.1m)	2.8m	Y
Esher 13	Roadside	TQ 513736, 164489	Y	Y (2.7m)	0.9m	Y
Hinchley Wood 1	Roadside	TQ 515248, 165535	Y	N	4.5m	Y
Hinchley Wood 2	Roadside	TQ 515218, 165578	Y	Y (3.5m)	9.8m	Y
Molesey 1	Roadside	TQ 514450, 168134	Y	Y (3.5m)	1.1m	Y
Molesey 2	Urban Background	TQ 514571, 168216	N	N	1.8m	N

Molesey 3	Roadside	TQ 515372, 167895	Y	Y (0.1m)	14m	Y
Molesey 4	Roadside	TQ 515330, 168272	Y	Y (0.1m)	1.6m	Y
Molesey 5	Roadside	TQ 515329, 168390	Y	N	0.4m	Y
Molesey 6	Roadside	TQ 515299, 168422	Y	Y (3.6m)	0.3m	Y
Molesey 7	Roadside	TQ 514807, 167933	Y	Y (0.1m)	6.7m	Y
Molesey 8	Roadside	TQ 514716, 167960	Y	Y (0.1m)	2.5m	Y
Molesey 9	Roadside	TQ 514507, 168086	Y	Y (4.2m)	2.6m	Y
Molesey 10	Roadside	TQ 514169, 168152	Y	Y (0.1m)	4.9m	Y
Molesey 11	Roadside	TQ 513970, 168241	Y	Y (6.3m)	1.6m	Y
Molesey 12	Roadside	TQ 513694, 168343	Y	Y (6.4m)	0.6m	Y
Molesey 13	Roadside	TQ 513463, 168388	Y	Y (0.1m)	3.8m	Y
Molesey 14	Roadside	TQ 513077, 168334	Y	Y (0.1m)	8.9m	Y
Molesey 15	Roadside	TQ 512886, 168223	Y	Y (6.3m)	3m	Y
Molesey 16	Roadside	TQ 512620, 168168	Y	N	2.5m	Y
Molesey 17	Roadside	TQ 515279, 168288	Y	Y (3m)	2.8m	Y
Molesey 18	Roadside	TQ 515338, 168292	Y	N	2m	Y
Molesey 19	Roadside	TQ 515338, 168292	Y	N	2m	Y
Molesey 20	Roadside	TQ 515338, 168292	Y	N	2m	Y
Thames Ditton 1	Roadside	TQ 515379, 167946	Y	N	0.9m	Y
Walton 3	Roadside	TQ 510132, 166336	Y	Y (2.7m)	0.4m	Y
Walton 4	Urban Background	TQ 511403, 164915	N	N	21.7m	N
Walton 5	Roadside	TQ 510702, 165471	N	N	0.9m	Y
Walton 6	Urban Background	TQ 511403, 164915	N	N	21.7m	N
Walton 7	Urban Background	TQ 511403, 164915	N	N	21.7m	N
Walton 8	Roadside	TQ 510154, 166281	Y	Y (2m)	2.9m	Y
Walton 9	Roadside	TQ 510082, 166379	Y	Y (2.2m)	2.7m	Y
Walton 10	Roadside	TQ 510140, 166522	Y	Y (2m)	3.3m	Y
Walton 11	Roadside	TQ 510000, 166401	N	N	2.2m	Y
Walton 12	Roadside	TQ 510117, 166354	Y	Y (6m)	1m	Y
Walton 13	Roadside	TQ 510117, 166354	Y	Y (6m)	1m	Y
Walton 14	Roadside	TQ 510117, 166354	Y	Y (6m)	1m	Y
Weybridge 1	Roadside	TQ 507448, 164900	Y	Y (3.8m)	1m	Y
Weybridge 2	Urban Background	TQ 508070, 165051	N	N	1.5m	N
Weybridge 3	Roadside	TQ 507368, 162600	N	N	1.5m	Y
Weybridge 4	Roadside	TQ 507705, 164907	Y	Y (5m)	2m	Y
Weybridge 5	Roadside	TQ 507609, 164966	Y	Y (0.4m)	1.5m	Y
Weybridge 6	Roadside	TQ 507511, 164936	Y	Y (5.5m)	0.5m	Y
Weybridge 7	Roadside	TQ 507199, 164804	Y	Y (0.1m)	1.5m	Y
Weybridge 8	Roadside	TQ 507150, 164761	Y	Y (0.1m)	4.6m	Y
Weybridge 9	Roadside	TQ 507065, 164815	Y	Y (0.8m)	1.3m	Y